The IRON AGE

July 30, 1959 A Chilton Publication The National Metalworking Weekly

What's Needed To Gain Promise Of Exotic Metals? P. 109

Will Steel Strike Lead to Price Boost? – P. 73

Extrusions: New Field For Cold Heading? – P. 76

Digest of the Week – P. 2-3

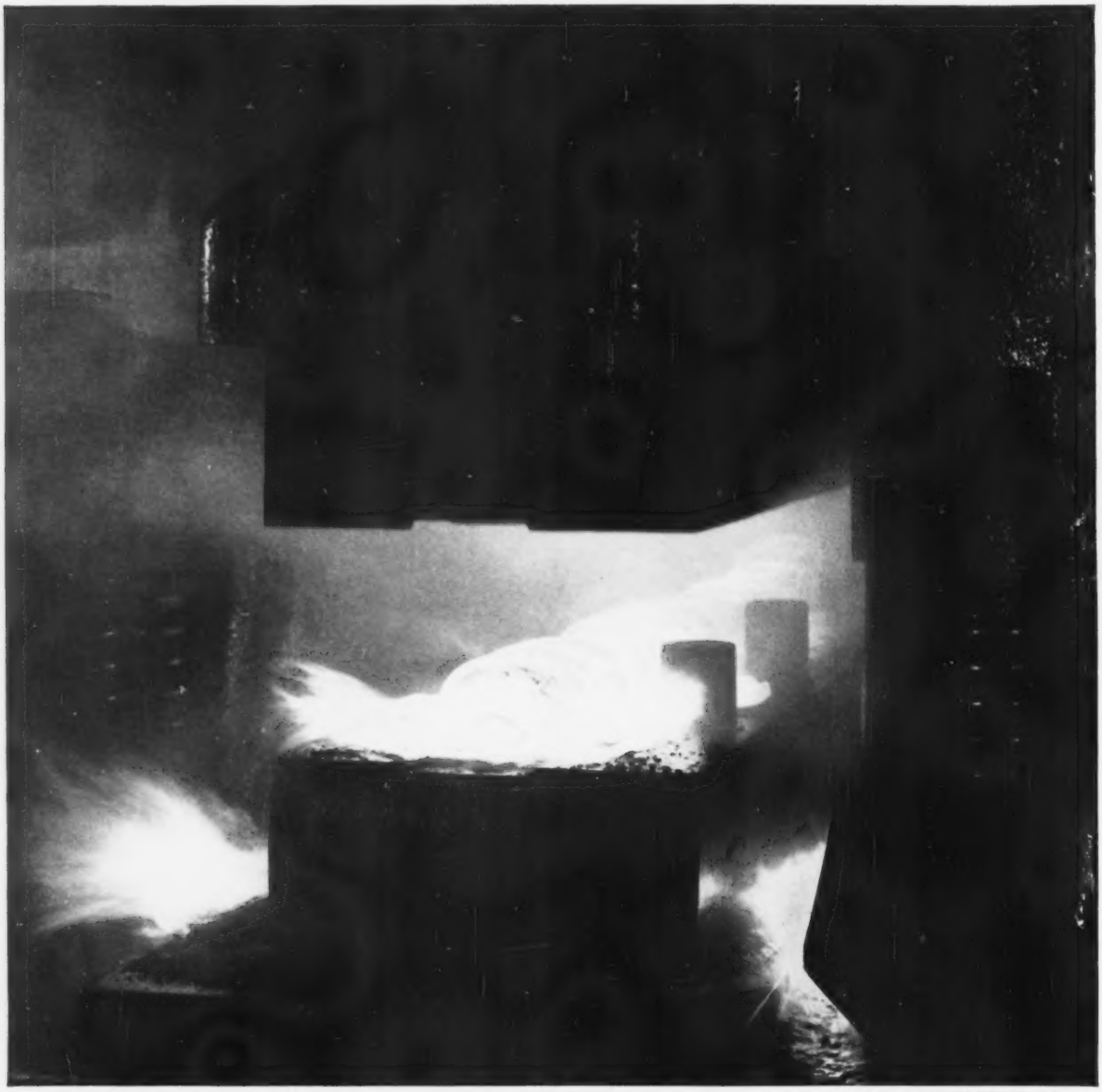


Photo courtesy of The Park Drop Forge Co.

HAMMER DOWN

YOUR FORGING COSTS

ARISTOLOY STEELS

...WITH UNIFORM QUALITY ARISTOLOY STEELS—Aristoloy bars and billets can save you forging dollars. Controlled melting of selected scrap, careful rolling and precise heat treating produce forging stocks of uniform structure and uniform chemistry. Uniformity means piece after piece can be forged in the same manner...production increased. Aristoloy is available in a full range of A.I.S.I. standard analyses, including carbon, alloy, stainless and leaded.

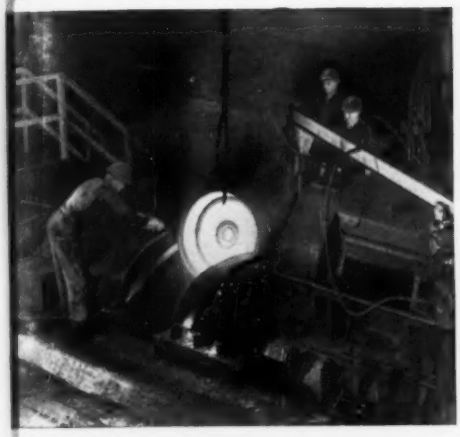
For complete information about Aristoloy forging stocks, call your Copperweld representative in your nearest large city...or write for NEW PRODUCTS and FACILITIES CATALOG.

COPPERWELD STEEL COMPANY

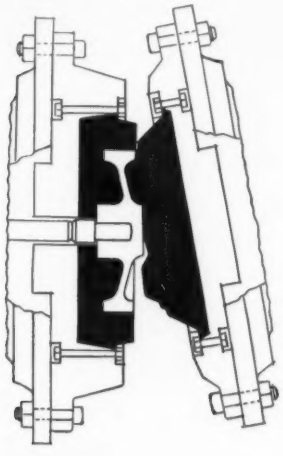
ARISTOLOY STEEL DIVISION • 4001 Mahoning Ave., Warren, Ohio • EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N.Y.

Unique Mill Forges and Rolls circular products in one operation

In less than one minute, this Bethlehem mill—the only one of its kind in the country —turns out a top-quality impression-die steel forging at a cost that's hard to match.



This is Bethlehem's famed circular-products mill—the Slick Mill. Named for its designer, Edwin E. Slick, this unique machine produces impression-die circular forgings ranging from 10 in. to 46 in. OD; as-rolled weights ranging from 100 to 2,000 lb. It handles almost any grade of steel—carbon, alloy or stainless, as well as certain heat-resistant grades.

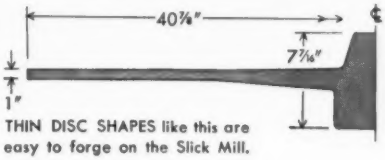


How It Works

Designed to operate in a horizontal plane, Bethlehem's Slick Mill is constructed with two *revolvable* spindles on which face plates are mounted. These face plates support the impression dies that form the steel billet into shape by a combination press and rolling action.

After the steel billet is heated and descaled, it is centered between the dies of the Slick Mill. Then a 1500-ton hydraulic ram actuates the spindle on the straight side of the mill, upset forging the billet. When this cycle is completed, a 2,000-hp motor actuates the spindle on the angle side of the mill and the rolling cycle begins. By continuing the upsetting action and rotation of the dies and work, the material flows into the recesses of the dies, resulting in the desired shape. *The entire rolling cycle takes about one minute.*

After rolling, excess material in the form of flash is sheared off; the hub, when necessary, is punched; and the forging is inspected.



THIN DISC SHAPES like this are easy to forge on the Slick Mill.

Cost-Saving Features

Quick operation: Only one minute is needed to convert a heated slug into a contoured forging, whether the product weighs 100 or 2,000 lb.

Quick die changes: Only 15 minutes are needed to change and set up dies. Even production runs as small as 25 or 50 pieces are economical.

Low die charges: Since contact time between die and work is very brief, and because there is no impacting, low-cost die blocks can be used. In many cases, die charges are ⅓ to ½ less than conventional impression dies.

Less steel needed: Utilizing the principle of forging design, the Slick Mill can produce lighter-weight sections without sacrificing strength.

Good physical characteristics: The process insures excellent grain flow, machinability and soundness.

Bethlehem's Slick Mill is readily adapted to jobbing or production quantities of forged circular products such as: gear blanks, fly wheels; crane track wheels; sheave wheels; brake drums; clutch discs; couplings; tire moulds; and turbine or compressor wheels. Products may be specified as-rolled or rough machined to specifications.

Your inquiry—whatever the quantity involved—will receive prompt attention. Call or write the Bethlehem sales office nearest you today.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF

TOM C. CAMPBELL, Editor-in-Chief
GEORGE F. SULLIVAN, Editor

Managing Editor — E. C. Beaudet
News-Markets Editor — J. B. Delaney
Technical Editor — J. J. Obrzut
Special Features — R. D. Raddant
Machinery Editor — E. J. Egan, Jr.
Engineering Editor — R. H. Eshelman
Art Director — T. S. Paaby

Associate Editors: F. J. Starin, P. J. Cathey, R. Schulin, F. T. P. Plimpton, Jr., R. R. Irving. Assistant Editor: R. S. Cowperthwaite, Jr. Regional Editors: K. W. Bennett, Chicago; T. M. Rohan, Cleveland; H. R. Neal, Detroit, G. G. Carr, New York; R. R. Kay, Los Angeles; G. J. McManus, Pittsburgh; G. H. Baker, R. M. Stroupe, N. R. Regeimbal, Washington. Correspondents: F. L. Allen, Birmingham; N. Levenson, Boston; R. E. Koebbe, St. Louis; J. Miller, San Francisco; R. Kazarian, Buffalo; D. R. Coughlin, Seattle; A. T. Collins, Houston; F. Sanderson, Toronto; F. H. Harley, London, England. Chilton Editorial Board: Paul Wooton, Washington representative.
Robt. Gunning—Readability Consultant

WASHINGTON EDITORIAL OFFICE
Washington 4....National Press Bldg.

BUSINESS STAFF

Production Manager — Warren Owens
Director Research — Oliver Johnson
Marketing Director — R. H. Groves
Circulation Mgr. — W. M. Coffey
Promotion Manager — Richard Gibson
Asst. Research Dir. — Wm. Laimbeer

REGIONAL BUSINESS MANAGERS
*Denotes editorial office also

Atlanta 3 ..... J. W. Sangston
32 Peachtree St., NE. — Jackson 3-6791
*Chicago 1 T. H. Barry, W. R. Pankow
360 N. Michigan Ave. — Randolph 6-2166
*Cleveland 15, R. W. Watts, R. L. White
930 B. F. Keith Bldg. — Superior 1-2860
Columbus 15, Ohio — Harry G. Mumm
LeVeque-Lincoln Tower — Capital 1-3764
Dallas 6 ..... W. J. Smyth
189 Meadows Bldg. — EMerson 8-4751
*Detroit 2 ..... W. J. Mulder
103 Pollister Ave. — Trinity 1-3120
*Los Angeles 28 ..... R. Raymond Kay
2420 Cheremoya Ave. — Holly'd 3-1882
*New York 17...C. T. Post, I. E. Hand
100 E. 42nd St. — Oxford 7-3400
*Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & 56th Sts. — Sherwood 8-2000
*Pittsburgh 19 ..... T. M. Fallon
1707 Frick Annex Bldg. — Atlantic 1-1830
San Francisco 3 ..... Don May
1355 Market St. — UNderhill 1-9737
W. Hartford 7 ..... Paul Bachman
62 LaSalle Rd. — Adams 2-0486
England ..... Harry Becker
15 Gratton St., Altrincham, Cheshire

A Chilton Publication

CHILTON OFFICERS & DIRECTORS
G. C. Buzby, President

Vice-presidents: P. M. Fahrendorf, L. V. Rowlands, G. T. Hook, R. E. McKenna; Treasurer: W. H. Vallar; Directors: M. E. Cox, F. P. Tighe, E. B. Terhune, Jr., R. W. Case, Jr., J. C. Hildreth, Jr., C. A. S. Heinle, J. H. Kofron—Comptroller, Stanley Appleby.

Indexed in Applied Science & Technology Index and Engineering Index.

BPA | NBP

Copyright 1959 by Chilton Company

THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $2.00. Cable: "Ironage," Philadelphia.

The IRON AGE

July 30, 1959—Vol. 184, No. 5

Digest of the Week in A

*Starred items are digested at right.

EDITORIAL

Mama Government: Why Always Run to Her? 7

NEWS OF INDUSTRY

*Special Report: Steel Prices Hang in Balance as Strike Continues 73
*Cold Extrusion Goes Competitive 76
Office Pay Goes Up 77
*More Aluminum Freight Cars 78
*Who Can Sell Your Product Best? 79
The IRON AGE Salutes 83
Men in Metalworking 99
*Steel Peace May Be Long Coming 158

FEATURE ARTICLES

*Make Exotic Metals Practical 109
*System Speeds Gear Inspection 112
*Do Foremen Have Time to Supervise? 114
*Punched Tape Guides New Gage 117
New Lathe Boosts Machining Output 118
*Search for Tomorrow's Metals 120
Single Drawing Shapes Fenders 122

NEWS ANALYSIS

Newsfront 9
Report to Management 85
*Automotive 87
Washington 91
*West Coast 93
*Machine Tools 95

MARKETS & PRICES

Market Planning Digest 71
*The IRON AGE Summary 155
*Purchasing 156
Index to Prices 159
Iron and Steel Scrap Markets 160
Nonferrous Markets 162
Clearing House 172

REGULAR DEPARTMENTS

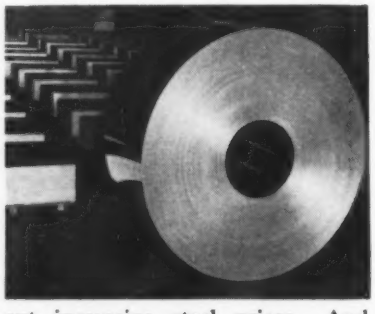
Letters From Readers 11
Fatigue Cracks 13
Coming Exhibits, Meetings 15
New Materials, Components 137
New Equipment 144

INDEX TO ADVERTISERS 177

NEWS ARTICLES

THE STRIKE AND PRICES

They're Inseparable—The crux of the steel strike rests on whether a settlement can be reached without increasing steel prices. And costs are a determining factor in prices. P. 73



LABOR NEGOTIATIONS

No Settlement in Sight — Steel labor and management are still far apart. Contract language is the explosive issue as strike goes into the third week. P. 158

ALUMINUM FREIGHT CARS

Carry More—It looks like a big year for aluminum sales to railroad markets. Aluminum Ltd.'s work has been capped with interchange approval for a hopper car. And Reynolds sold 18 million lb for freight cars in one order. P. 78

MANUFACTURERS AGENTS

Pros and Cons—The most economic method for selling a product depends on a number of factors. Sometimes, a manufacturers agent

Metalworking

EXOTIC METALS: Tomorrow's metals are being worked today. The key to making them practical is to get consistent quality and adequate volume. This 700-ton extrusion press at Wolverine Tube has the flexibility to handle a variety of special metals. P. 109

can do what a company sales force can't do effectively. P. 79

TRIPLE-SONIC JETS

Attractive, But Costly—Aircraft engineers say they have all the needed know-how to build a triple-sonic jet. But financing such a costly project is the stumbling block. P. 93

FEATURE ARTICLES

GEAR BLANK INSPECTION

New System for Bevels — By omitting the crown of a bevel gear as reference point, this new system of inspection tolerances proves to be fast and highly accurate. Only one machine and one universal checking fixture inspects gear blanks in sizes to 15 in. P. 112

FOREMAN WORKLOAD

Time to Direct Men?—Surveys show that little over half a foreman's time is spent in direct supervision of his department. Key to improving a foreman's efficiency is training in the administration of incentive plans. P. 114

GAGE WITH PUNCHED TAPE

Set Up for Accuracy—A numerically-controlled machine quickly and automatically gages at any number of coordinate points on both inner and outer surfaces of complex parts. Digital readout provides a printed record of each part. P. 117

VERTICAL LATHE

Boosts Machining Output—Run an old and a new vertical turret lathe side by side and the advantages of modern equipment can't be denied. Here's a case of a fourfold increase in machining output. P. 118

SEARCH FOR METALS

Beneath the Sea—Using a seagoing rig, an American scientific team plans to drill a hole deeper toward the core of the earth than man has ever ventured. It may be the answer as to whether the earth can continue to yield enough metal and minerals for tomorrow's needs. P. 120

MARKETS & PRICES

COLD EXTRUSION

Equipment Battle—Cold heading machines are now actively competing with presses in cold extrusion work. Equipment sales increase as more companies switch to cold extruding of small steel parts. P. 76

VINYL COATINGS

Auto Uses to Grow—Ford has been licensed to produce vinyl coated metal. Its use in auto interiors is expected to make substantial gains in a year or so. P. 87

TOOL MARKETING

Showcase Approach—An occasional local show can be helpful to sales, some machine tool distributors discover. One "open house" attracted 1000 visitors. P. 95

POST-STRIKE DELIVERY

Long Wait for Buyers—Steel users who are just now putting in orders for steel will have a long wait. It could be 8-10 weeks after strike is over before delivery can be made on some items. P. 155

TOOL AND DIE INDUSTRY

Ready for a Busy Fall—Right now, Detroit area tool and diemakers are in their "in between" season. But they expect a lot of work from the auto industry this coming autumn. P. 156

NEXT WEEK

PROBLEM EMPLOYEES

A Hidden Cost — One of the most common, but often unrecognized, hidden costs in business is the problem employee. Next week, industrial psychologist Dr. R. N. McMurry will explain how to recognize and handle these people.

A COMPLETELY NEW SERIES!

Lodge & Shipley PRESS BRAKES

WILL *YOUR* NEW BRAKE HAVE ALL THESE FEATURES AT LODGE & SHIPLEY'S LOW *STANDARD* PRICE?

NEW... Pitman Assembly redesigned for long life with little maintenance

EXCLUSIVE . . . Combination Air Clutch and Mechanical Brake

NEW... Wedge Ram Pressure Release, improved exclusive design

NEW... Quad-lateral Ram Slide Bearing, full-length, full-time

NEW... Ready-Pivot Ram Adjustment for out-of-parallel operations

NEW . . . Dovetail, Double Rocker Bed-Mounting on solid steel housing

NEW... "Long Operation" standard controls for versatile operation

PROVED . . . One-piece, heat-treated, machined and ground Eccentric Shafts

NEW... Micro-Fog, oil bath and grease Lubrication System

PROVED . . . Two full bearings on each eccentric shaft

NEW . . . Sectional die clamps on ram nose open automatically

NEW... Stroke Position Indicator shows top and bottom dead center

NEW . . . optional Two-Speed Transmission can be field-installed

Available in 120 through 250 ton capacities, bed lengths from 8 to 14 feet. Shown is Model Series 150A10 capacity 1/4" x 10' with above-the-floor bed.

New and completely redesigned, Lodge & Shipley Power Press Brakes offer feature after feature important to accurate, low-cost operation. Virtually every one of these advantages are included in the low base price . . . extras on the machine but *not* on the invoice and many of the models now have an above-the-floor bed!

Space limits us to a bare listing of important new features. Request your copy of the New Condensed Press Brake Catalog today. **The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio.**

SEE OUR CATALOG IN SWEET'S

More than ever before, your LODGE-ical choice . . . **Lodge & Shipley**

COL. A. E. R. PETERKA, *Manager of Aircraft Sales, Lamson & Sessions, tells why...*

"Flying fasteners" keep our sights high

AT Lamson & Sessions, we're producing many types of special "astronautics fasteners"—for use in aircraft, engines, missiles, space satellites. This fact has important meaning to you, as a fastener buyer, whether or not you use these high-precision specialties. Here's why:

Engineering, inspection procedures, precision equipment at Lamson are geared to meet strict military and aircraft specifications, where required. Since we're set up this way, many of the same procedures and quality controls are applied to our production of commercial fasteners. This means you can expect, and get, superior quality and precision from Lamson.

New quality standards are being set in astronautics fasteners... to meet the grueling demands of supersonic speeds, severe "blast-off" stresses, higher operating temperatures. Just as automotive requirements raised Lamson's quality levels far above the wagon-buggy-and-plow days of 40 or more years ago—so have astronautics imposed a new set of standards. These permeate everything we do. And *all* our customers benefit!

Take advantage of the specialized engineering know-how and high quality standards available through Lamson... wherever you need fasteners for critical assemblies.

L & S Fastener Engineering helps you "tighten up" on...

- **PURCHASING COSTS**
- **INSPECTION AND HANDLING COSTS**
- **ASSEMBLY COSTS**

LAMSON & SESSIONS

5000 TIEDEMAN ROAD · CLEVELAND 9, OHIO

Plants in Cleveland and Kent, Ohio · Chicago and Birmingham

After 17 years of outdoor service there's no rust on this fence charger case made of ZINCGRIP PAINTGRIP. Dark areas are remnants of original paint that weathered away in sun and rain. Small photo shows complete new charger before painting.

New steels are born at Armco

17 Rust-Free years for Fence Charger ...thanks to Armco ZINCGRIP PAINTGRIP

There's no sign of rust on this fence charger case after more than 17-years' outdoor service on a midwestern farm.

"This is typical of the long life these cases have given our customers since we first standardized on Armco ZINCGRIP® PAINTGRIP® Steel in 1940," says an official of Parker-McCrory Manufacturing Company, Kansas City, Missouri.

Workable—Paintable

"These cases require a deep draw," adds the official, "but we've never had trouble with flaking or peeling of the zinc coating. What's more, paint holds tight, even though we apply it right after fabrication without any special surface preparation."

* * *

Remember: Armco ZINCGRIP PAINTGRIP Steel is zinc-protected and workable. Important too, its surface is specially prepared for painting before it leaves our mill. If you'd like to know more about the ways it can help *you* sell products and save money, just fill in and mail the coupon.

ARMCO STEEL CORPORATION
2709 Curtis Street, Middletown, Ohio

Please send me more information about Armco ZINCGRIP PAINTGRIP Steel.

NAME_____ TITLE_____

FIRM_____

STREET_____

CITY_____ ZONE____ STATE_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Mama Government: Why Always Run to Her?

Freud and the steel strike seem a long way apart. But maybe they are closer than we think. Perhaps some people are insecure in the steel labor hassle these days.

Both sides have flirted on the fringe of "invoking" the White House, or the government, or the Senators, or Ike's people.

The most flagrant running to Mama Government was done by the union. It was getting a real shellacking from the solid steel front. It knew a well-trodden path to Washington—and it took it with much huffing and puffing.

The President entered the steel fracas long ago. He demanded two or three times that there be no steel price increase. And he told both sides to reach an agreement without a strike.

When the steel firms agreed publicly with Ike that there should be no settlement which would require a steel price increase they "invoked" his name in this labor hassle. They used his prestige to show that they were for what he was for. There is nothing wrong with this, but it was an indirect use of the White House label.

Far deeper than this was the action of the steel union. It got Ike's people to arrange a rescue mission for the union. The result was a two-week contract extension. This use of the White House got the union off the hook.

A second last-minute plea by President Eisenhower failed, and the strike was on. The breakdown displayed such a show of "far-apartness" that Mother Government is being called upon on all sides to get the mills going again. Admittedly some of this is political, but what isn't these days?

It has been this way before, though. The government has been a party to almost all the steel settlements since 1946. Once Harry Truman took over the industry until the Supreme Court said "nothing doing." A tedious panel session on pensions was followed by a "break" in the steel front in 1949. The five and a half weeks' 1956 strike was settled by government pressure.

Now it looks as if Ike will move deeply into this fracas. Neither side has completely avoided using the Administration, or Senators, or "government" in its fight. Certainly the union can't deny it has implored Mama Government to "come in" and do something.

If this keeps up long enough Mother Government will come in—and stay in!

Tom Campbell

Editor-in-Chief

These standard bearings have special qualities

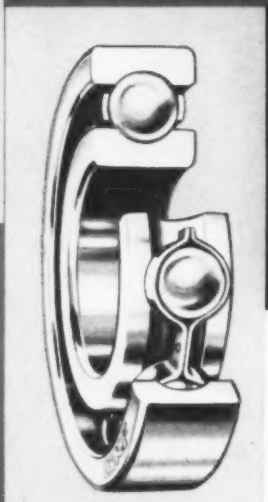
—*does this mean they cost more?*

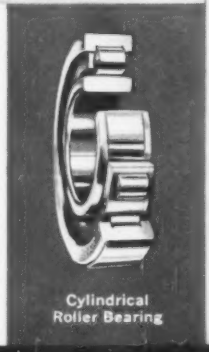
Not necessarily.

*Take the spherical roller thrust bearing, for example. SKF bearings of this type can carry unusually heavy loads: either thrust or combined thrust and radial. Unmatched for single bearing performance when high thrusts must be carried at high speed. And they are completely self aligning. Because of these qualities, engineers choose them for heavy-duty applications over large angular contact ball bearings.

Yet this standard SKF bearing is competitively priced. Furthermore, it is promptly available in 25 sizes ranging from 4.3″ to 14.9″ I.D.

Moderately-priced, high-quality ball and roller bearings are continually rolling off SKF's production lines. So why not get all the facts on those you can use? Just call the nearest of our twenty-five sales offices. 5927





Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

*REG. U. S. PAT. OFF.

Aluminum-Core Tungsten

A new type of stranded tungsten wire for vacuum metallizing has an aluminum core. Coils made from this wire will wet more quickly. In service, the aluminum core vaporizes and disappears in the first flash of the metallizing process, leaving space between tungsten strands. It increases tungsten surface area by at least 25 pct, giving as much as 80 pct more production per coil than former types.

Heat Treat for Rockets

A Midwest defense contractor has started work on a huge heat treatment facility for the manufacture of cases for solid propellant rocket motors. The furnace will enable the company to process rocket cases up to 30 ft long and 10 ft in diameter and could be expanded to handle cases up to 40 ft long.

Gains from Nuclear Study

Basic research in universities is already paying off for industry. Radiation studies of the nature of combustion and ignition forecast higher engine efficiency. Radiation research on metals are revealing new aspects of microstructure and dynamics of metals combinations.

Press Materials Research

Materials remain a limiting factor in U. S. weapons systems development. Defense Dept. is trying to remove this limitation by assigning research for major improvements in structural and other materials. One project in this field is aimed at super-strength, antiradiation materials. This project also takes in thermoelectric devices needed for space probe satellites.

High-Temperature Source

Powered by a standard welding generator, a new inexpensive, high-temperature source attains 2500° to 12,000°F and above. The unit is a small plasma generator that may have wide application as a low-cost research and production tool. Techniques may be developed to flame-spray refractory oxides and ceramics. Unit can be fired into a vacuum or pressure chamber without major modification.

Consider Direct Reduction

A direct reduction plant with capacity of 250-500 tons a day is in the immediate thinking of a major steel mill. While the mill is sold on the technical soundness of direct reduction, it's thinking of the process as a partial substitute for scrap and is holding off because of the relatively low prices of scrap this year.

Custom Standards for Tools

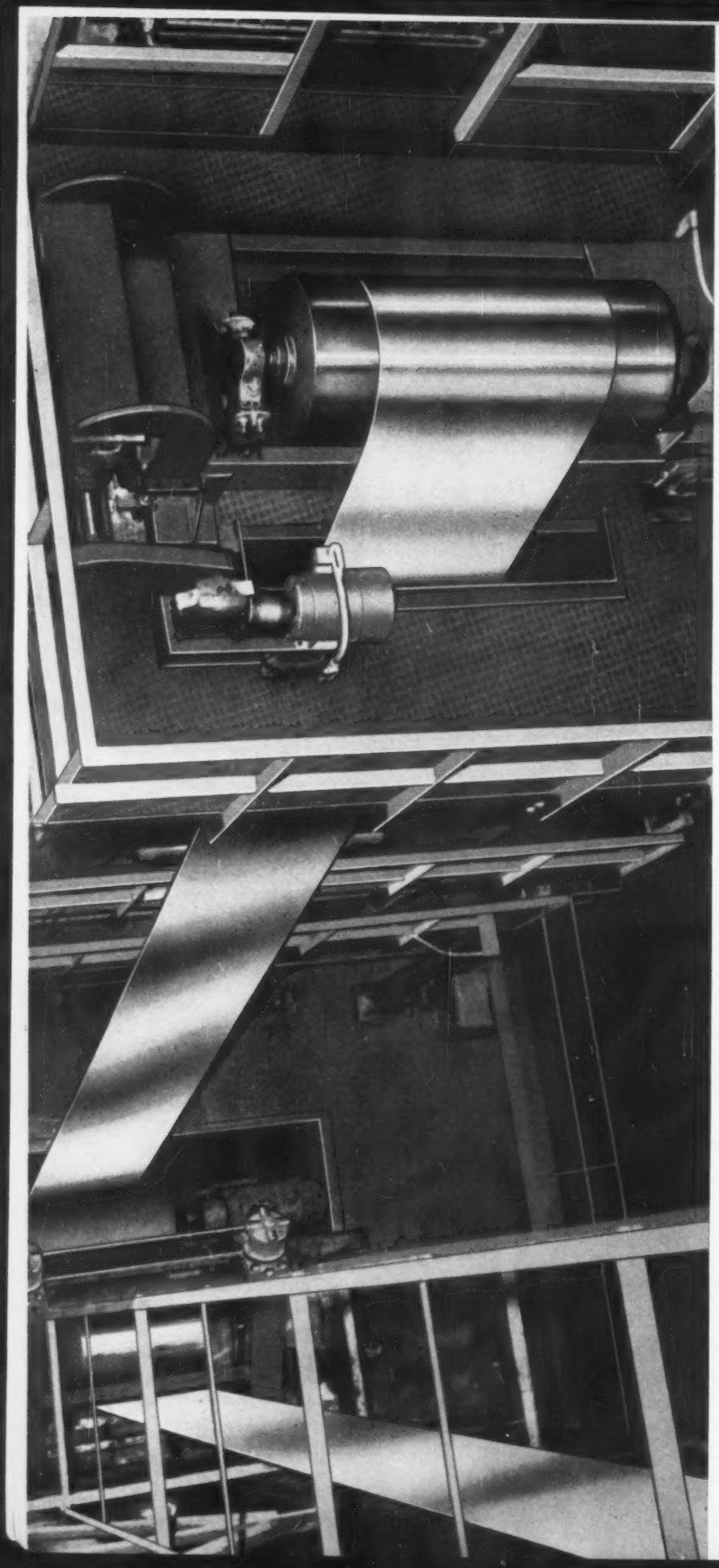
Commenting on recent approved building-block standards, machine tool insiders now feel overall savings resulting may not exceed 10 pct for automotive users. Much larger savings are promised by current efforts at increased use of builders' standard components. This development is spurred by the building-block drive and the need for broader market for transfer-type machines.

Ablation for Nose Cones

Reinforced plastic test samples, shaped into miniature nose cones, have proved highly resistant to heat during recent ablation studies. In a simulated missile re-entry, the parts successfully endured 15,000°F for 30 seconds.

Construction to Run Short

Construction may be the first large industry to run short of steel supplies during the strike. Government supply experts, alert to possible shortages, see the reasons as these: A wide range of products is used in the industry. This makes stockpiling complicated. The opportunity for advance decisions on buying, even allowing for past experience, is limited.



LIGHT GAUGES

at High Speeds

Need Rugged

Equipment

Each step toward paper-thin tin plate accentuates the operating problem. Tracking becomes more acute as speeds increase. Coils increase in diameter and weight. Tension becomes more critical.

The equipment must be heavy and rugged. High speeds with lower tensions in annealing, tinning and recoiling can only be accomplished with rugged equipment. Reels, both pay-off and tension, must be heavier to accommodate the bigger coils. New electrical controls are only practical when applied to sturdy mechanical equipment. Only rugged machinery, for which Aetna-Standard is noted, can stand up to 21-turn operation at high speeds with a minimum of strip breakage, down time and maintenance.

BLAW-KNOX COMPANY
AETNA-STANDARD DIVISION
FRICK BUILDING • PITTSBURGH, PENNSYLVANIA

57 Years' Experience in Engineering Equipment for Processing ALL Gauges of Sheet and Strip

Advice on Foremen

Sir—Kindly send me three copies of the Special Report in your June 25 issue: "What Most Workers Expect From Their Foremen."

I believe this article will be extremely helpful to all of our supervisors. We will appreciate your permission to reproduce it for distribution within our organization.—L. B. Peterson, Asst. to the Vice Pres. and Gen. Mgr., Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Sir—We would like reprints of your article "What Most Workers Expect From Their Foremen" in your June 25 issue.

This article, in my opinion, is an excellent and a very pointed resume of the subject and can be well used in our seminars for foremen.—John Kasper, Works Manager, Elco Tool & Screw Corp., Rockford, Ill.

Sir—We would like to receive 15 additional copies of "What Most Workers Expect From Their Foremen."—J. A. Behney, Asst. to the Vice Pres., Hofmann Industries, Inc., Sinking Spring, Pa.

Sir—Would you send me two reprints of this article.—T. J. Hartford, Training Director, Aluminum Co. of America, New Kensington, Pa.

Sir — Will you please send 12 copies of the article "What Most Workers Expect From Their Foremen."—E. R. Smith, Div. Supt., Allison Div., General Motors Corp., Indianapolis, Ind.

Sir—Please send us a reprint.—C. B. Cooke, General Superintendent, Fabricating Departments, The National Supply Co., Torrance, Calif.

Sir—May I have another copy of "What Most Workers Expect From Their Foremen." — K. B. Wooldridge, Training Dept., Pittsburgh Works Div., Jones & Laughlin Steel Corp., Pittsburgh.

▪ **In all cases, reprints are on the way.—Ed.**

Copper Billets

Sir—In your June 11 issue you mentioned a casting setup for making copper billets by the semi-continuous casting process, under the heading, "Quality Copper Billets." The statement that the under pouring method is used to introduce metal into the molds is particularly interesting.

Can you provide any information on the location of the installation and the equipment supplier?—O. A. Huhtala, Project Engineer, Chase Brass & Copper Co., Waterbury, Conn.

▪ **For further information contact the Lobeck Casting Processes, Inc., 114 East 32nd Street, New York, N. Y.—Ed.**

"That new man excels in initiative, group integration and responsiveness, but I just can't get him to work."

In a recent nation wide survey of honeycomb section manufacturers by an independent research organization, 75% of the responders indicated that uniform thickness of the thin metal core material was the most important factor demanded of suppliers.

With modern equipment, such as Accu-Ray gauges, Sendzimir rolling mills and unique vertical annealing furnaces, Somers combines 50 years of pioneering in the thin metal field to answer this problem with Somers ThinStrip®, produced exclusively by Somers Brass Co., Inc.

Somers also guarantees width tolerances as close as ± .001", a plus feature that assures the highest precision in honeycomb structures.

Whether your thin metal problem be in stainless, nickel or its alloys, copper or its alloys, 17-7, PH-15-7 MO or other honeycomb metals, you can depend on Somers ThinStrip® to meet your most critical specifications.

Write for Confidential Data Blank without cost or obligation.

FOR EXACTING STANDARDS ONLY

Somers

Somers Brass Company, Inc.

102 BALDWIN AVE. WATERBURY, CONN.

STANSCREW

Symbol of a new concept

in fastener service

American industry is learning Stanscrew means extra values.

This symbol personifies a trained staff of fastener specialists. Their technical assistance can often help you reduce fastener and assembly costs.

It means extra quick deliveries from complete inventories maintained at three conveniently located plants . . . over 5,000 different types and sizes to assure a broad selection for the great majority of your requirements . . . and, above all else, fasteners of consistently high quality.

Although it first appeared in 1958, the Stanscrew trademark represents a wealth of fastener experience. For it combines the technical skills and specialized facilities of three major manufacturing divisions of Standard Screw Company, each an honored name for more than 80 years. They are:

THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

For fasteners, specify Stanscrew. For other needs of home and industry, Standard Screw divisions also produce:

Moen single-handle faucets • Hartford textile spindles
Roosa Master fuel injection pumps • Chicago tappets

Each division also provides a complete design and manufacturing service for cold headed and screw machine products.

STANDARD SCREW COMPANY
2701 Washington Boulevard • Bellwood, Illinois

What's Going On?

Don't ever ask an aluminum man what's new. You're sure to find out with a vengeance.

And, not to keep you in suspense, here is what's new:

Kaiser Aluminum & Chemical Corp. has come up with a new calling card for its salesmen. Naturally the "card" is made from aluminum—light gage sheet alloy 3003 tempered H14, standard satin finish, lithographed by Wilson-Hurd Mfg. Co., Wausau, Wis.

Cost Comparison — Kaiser says the aluminum cards are "slightly more costly than the cards we have been using. In fact this price differential is so slight we can say the aluminum cards are reasonably competitive in price."

Having some in the office we can add they are attractive and also durable.

Classy Headpieces—Next comes Reynolds Metals Co. with the comment: "Aluminum may soon be going to a lot of people's heads." What Reynolds has in mind is the new hat (see photo) made by John B. Stetson of Philadelphia. It will twinkle with touches of Reymet, Reynolds aluminum yarn. Black and brown fedoras will be marketed.

Fun and Frolic—Aluminum Co. of America (not to be topped) is recommending a new sport. It's called aqua bobbing. For the aqua we suggest a lake or seashore. (You'll see later why a swimming pool isn't a good bet.)

Anyway, the contraption, made by the Aqua Bobber Co., in Maumee, O., consists of a huge fiberglas-resin sphere and a crow's nest-type platform separated by a 14 ft aluminum mast (alloy 6061-T6), supplied by Alcoa.

Water Cowboys—The idea: User stands on top of the mast and shifts his weight to make the Bobber dip and pitch. An expert, says Alcoa, can twist or spin the Bobber during its flight, experiencing a roller coaster sensation on the way down.

The aluminum mast has a yield strength of 40,000 psi. Considerably greater, we might add, than do users abruptly halted by violent contact with the rim of a swimming pool.

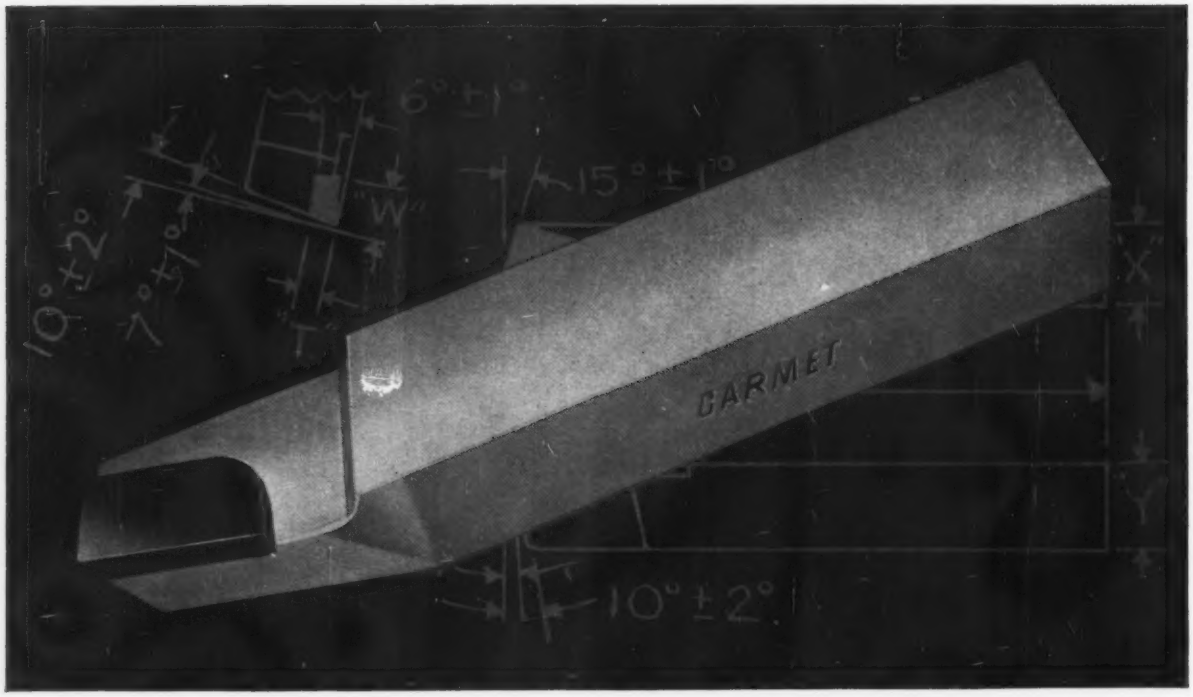
Other Products—The news from the north about the adventures of aluminum is far more down to earth. Aluminium Ltd. reports cathedrals in the Netherlands are being cleaned and renovated by workers using 100 ft mobile aluminum towers. (Did we say down to earth?)

Security Plus

Then there's the tale about a sales engineer who made a call on a government scientific laboratory. He asked permission to check and bring up-to-date one of their catalogs. The request was refused. Reason: The catalog file was restricted and not available to unauthorized personnel.

However—the catalog had originally been given to the government by the sales engineer. And it included only standard items of equipment.

STOP WORRYING
ABOUT FLEXIBLE
TUBING PROBLEMS
PENFLEX
Has The Answer
. . . with a complete line of all types and sizes of flexible metallic tubing . . . plus "Flexineering." That well-known technical help of Penflex engineers on your specific design, application and installation . . . plus the "know-how" to supply just the right flexible tubing you need.
Whether you need steel, bronze or stainless-steel to convey air, oil, water, gas, steam, volatiles or light solids, Penflex has the answer. Its complete line of corrugated and interlocked tubing is rugged, safe at high pressures and temperatures. Write for complete data to Pennsylvania Flexible Metallic Tubing Co., Inc., 7210 Powers Lane, Philadelphia 42, Pa.
NEW DATA
BOOK FREE
Write for your copy.
Penflex Interlocked Hose
Penflexweld All-Metal Tubing
PENFLEX
TIGHT AS A PIPE BUT...
FLEXIBLE



YOU DON'T HAVE TO BABY CARMET CARBIDE TOOLS

—on short or long runs!

A full range of Carmet Carbide cutting tools are available to answer every cutting need . . . and allow you to cut with profit. The Carmet Carbide Tips are carefully brazed to alloy steel shanks, strong, tough and beefed up in design to support the carbide.

Full guidance in selecting the proper grade, assistance in selecting the proper tool, is available locally from your Carmet Distributor. He stocks a full line, is there to serve you. Call on him or the Carmet Service Engineers whenever they can help. Carmet Division, Allegheny Ludlum Steel Corporation, Detroit 20, Michigan.

FREE NEW CARMET CATALOG

This 32-page first edition contains prices and complete specifications on Carmet's full line of cemented carbide tipped tools, Indexable Inserts, blanks and holders. Speed and feed charts, grade comparisons and ordering information included.

ADDRESS DEPT. A-192

USE THIS CARMET GRADE SELECTION CHART

. . . then machine at optimum feeds and speeds

Carmet Grade	Application	Industry Designation
CA-3	For heavy machining of cast iron and nonferrous material. 300 series stainless.	C-1
CA-4	Machining cast iron and nonferrous material. 300 series stainless.	C-2
CA-604	High Velocity finishing.	C-8
CA-605	Precision boring steel. Light, fast cuts.	C-8
CA-606	Light, fast machining on steel, stainless and high temp. alloys.	C-7
CA-608	Light to medium-heavy machining on steel.	C-7
CA-610	General machining on steel. Heavy roughing cuts.	C-6

WSW 7332 A

CARMET

CEMENTED CARBIDE DIVISION OF
ALLEGHENY LUDLUM STEEL CORPORATION

COMING EXHIBITS

Instrumentation Show—Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22. The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Asso-

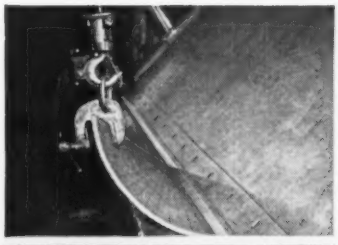
(Continued on P. 16)

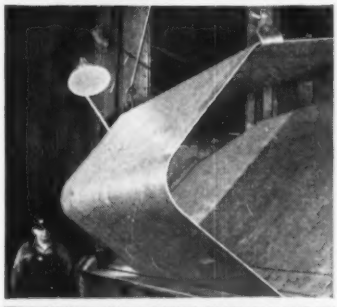
Bending Steel Plates for WELDMENTS?

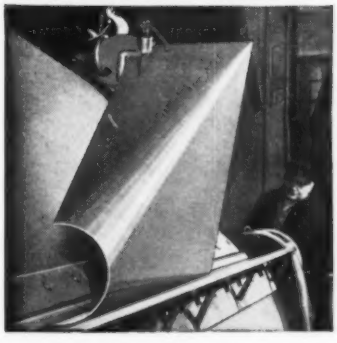
do it economically with

CHICAGO® POWER BENDING BRAKE

(no dies needed)



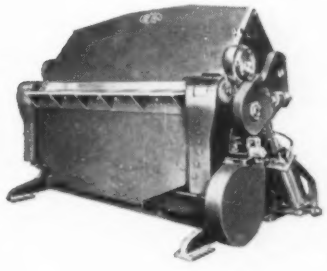




The accompanying illustrations give an idea of the versatility of the CHICAGO bending brake. No dies have to be changed or adjusted—no dies are used on these jobs. Yet, duplication is easily obtained on successive pieces. The machine is quickly adjustable for different thicknesses of material up to rated capacity. Automatic stop regulates the angle of bend. This, too, is adjustable to any degree of bend. The ease of changing from one job to another and the elimination of die costs make the CHICAGO bending brake the economical method for bending steel plates for weldments.

Many standard sizes are available with capacities for bending mild steel up to 12 feet by ¾ inch or 16 feet by ½ inch. Also many standard sizes in hand and power operated models for sheet metal.

BULLETIN P-55
This bulletin gives the details of how these and many other jobs are handled. Also complete description of the machine and specifications of the standard sizes.
Ask for a copy.



Front view of one of the heavy duty models of CHICAGO power bending brake showing the operation end of the machine.

Recommendations for any job on request.

6473

CHICAGO DREIS & KRUMP

Press Brakes • Straight-Side Presses • Press Brake Dies

Hand and Power Brakes • Special Metal-Forming Machines

DREIS & KRUMP
MANUFACTURING CO.

7430 South Loomis Boulevard, Chicago 36, Illinois

OVER 900

STEEL SERVICE CENTERS

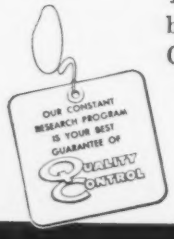
throughout the United States

AWAIT YOUR CALL!

They maintain large, diversified stocks of cold finished steels to meet *all* of your requirements under 6000 pounds.

They have the facilities, experience and desire to serve you promptly and efficiently —as your requirements demand.

To be sure of uniform quality—from bar to bar, length to length—always specify Wyckoff Cold Finished Steels.



WYCKOFF STEEL PRODUCTS
• Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares • Wide Flats up to 12¾" x 2¾" and 14" x 1¼" • All types of Furnace Treated Steels including Carbon Corrected Steels

SPECIALISTS IN COLD FINISHED STEELS EXCLUSIVELY

WYCKOFF STEEL COMPANY

GENERAL OFFICES:
Gateway Center, Pittsburgh 30, Pa.
Branch Offices in Principal Cities
Works: Ambridge, Pa.,
Chicago, Ill., Newark, N. J., Putnam, Conn.

EXHIBITS, MEETINGS

(Continued from P. 15)

ciation headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society — National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors — Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago, Association headquarters, 420 Lexington Ave., New York.

Society of Automotive Engineers—National aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc. —Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

Conveyor Equipment Manufacturers Assn. — Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton-Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.

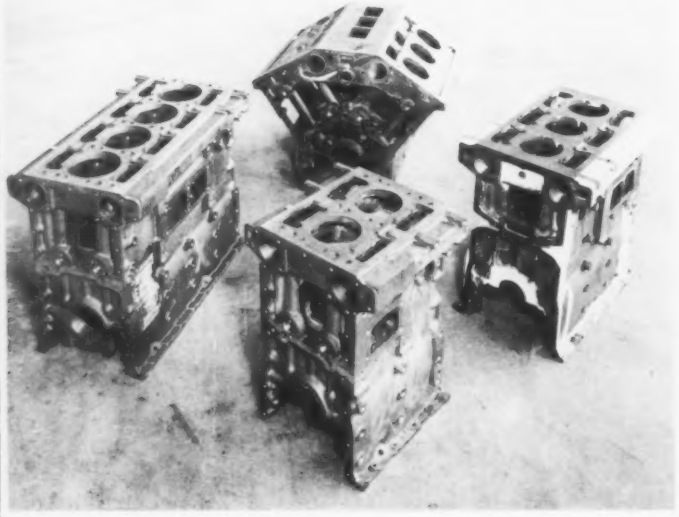
Tomorrow this transfer machine will work on a different part

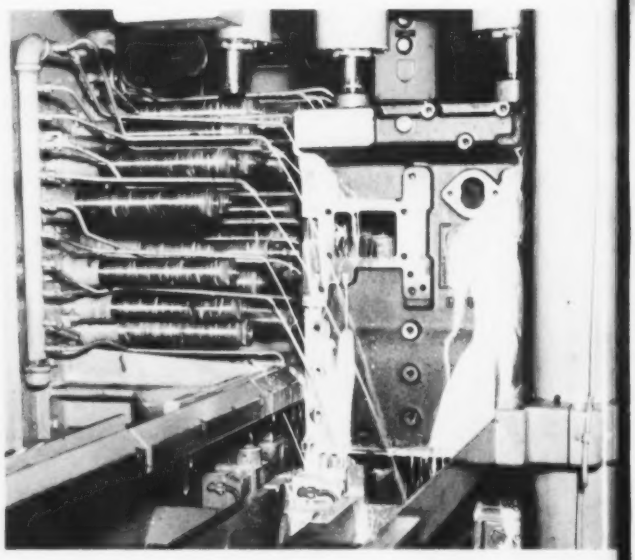
. . . Natco flexible automation can speed your production too.

(see other side)

FOUR PARTS OR ONE CAST IRON OR ALUMINUM

It's all the same to these Natco transfer machines





Look at these four diesel engine blocks. Each is a different machining problem, yet one line of three Natco Holeways does the complete job on them all.

Natco designing skill shows in the easy way these machines accept the four different blocks, either cast iron or aluminum. In only 40 working stations these machines can perform 485 operations. Ingenious transfer devices enable all faces of the workpiece to be machined. Versatile building block construction keeps the line ready for conversion when models change.

Natco Holeway No. 1 is capable of performing 173 different operations—drilling, rough boring, reaming, chamfering and counterboring.

Holeway No. 2 does 139 similar operations, including end milling of these same engine blocks.

Holeway No. 3 performs 173 tapping operations. These machines work on all the external faces of the blocks, including the angular faces of the V-block.

Product mix problems? Think what a truly flexible Natco like this could do for them! Weigh the value of a Natco which accepts a variety of parts and decides what work to do on them. Even if your production won't justify this ultimate in automatic machining—Natco builds drilling, boring, tapping, facing, reaming, chamfering machines in all degrees of automation.

Standard or special, if your machining job is holes, Natco makes the machine to do it better. Let our representative show you. Call him today.

NATCO NATIONAL AUTOMATIC TOOL COMPANY, INC., RICHMOND, IND.

Big Paul digs and dumps 105 tons in 50 seconds!

USS "T-1" and TRI-TEN Steels cut dead weight—boost strength

Even from a 100-foot-high perch, the mammoth size of the bucket of Big Paul, the King of Spades, is hard to comprehend.

There are three of these 70-yard giants—all built by Marion Power Shovel Company. All achieve strength and toughness with least weight by the use of USS "T-1" Constructional Alloy Steel and USS TRI-TEN High-Strength Low-Alloy Steel.

Big Paul sets the pace at the Peabody Coal Company's River King mine near Freeburg, Illinois. It rams through rock and shale to uncover some two million tons of coal per year.

Since 1950, the art of big shovel making has increased dipper size from 35 to 45, 55, 60, and now 70 cubic yards per bite. Most of the buckets and dipper sticks of these giant shovels are made of USS "T-1" Steel, for otherwise, it would be almost impossible to make them light enough and tough enough. They hold up in this service, taking terrific impact abrasion and shock loading, even in the dead of winter. This is possible because USS "T-1" Steel retains its toughness at temperatures far below zero.

Dipper Size Increased 25%

USS "T-1" Steel has often enabled a boost in the capacity of original equipment without increasing weight. For example, a 20-yard bucket was replaced with a 24-yard "T-1" Steel job. Other dippers were boosted from 26 yards to 32, and 36 yards to 45—increases of 25%.

Many other parts—dipper stick, bail handles and crowd rack—are built stronger and lighter with this 90,000 psi minimum yield strength constructional alloy steel. (USS "T-1" Steel plates up to 2½ inches thick inclusive are *now* available with a minimum yield strength of 100,000 psi.)

The booms and A-frames of most shovels over 45 yards are designed with high-strength low-alloy steels with 50,000 minimum yield point . . . usually USS TRI-TEN Steel.

Perhaps you need a steel that offers higher yield strength, extraordinary toughness and resistance to impact abrasion, combined with relative ease of fabrication. USS "T-1" Steel is your answer, and we'll gladly help you adapt it to your application. For free booklet, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS, "T-1" and TRI-TEN are registered trademarks

◀ 70-yard dipper and handle, crowd rack, bail and sheave blocks—all built stronger and lighter with USS "T-1" Steel.

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel

Navy goes fission again

On this vertical boring mill at U. S. Steel's Homestead Plant, you see a forged steel flange that will serve aboard one of the Navy's new guided missile frigates. These are an entirely new class of naval vessel—their primary mission is the destruction of air targets and they are nuclear-powered.

The flange will be welded to other forged steel parts to form a sealed nuclear reactor vessel. Only a forging of the very best quality is suitable for this critical service. To obtain this quality, vacuum-cast electric furnace steel was used. The flange was carefully forged from a Ni-Cr-Mo alloy ingot about 72" in diameter and was heat treated to meet rigid specification requirements. Mechanical tests as well as magnetic particle and sonic inspection methods were utilized to assure a quality product. As shipped, the flange weighed over 21½ tons.

Many nuclear forgings like this one are made by U. S. Steel because here, the complete production is supervised and controlled by a team of forging experts. They melt the steel, pour the ingot, forge, heat treat and machine it. The very same team of USS Forging experts who made this flange will fill your order. We welcome your inquiries or requests for our free 8-page booklet about USS Nuclear Forgings. Write to United States Steel, 525 William Penn Place, Room 6029, Pittsburgh 30, Pa.

USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel

USS

Wood proves Stainless Steel is simple to fabricate

General Sales Manager, C. Paul Carlson, points to the Stainless Steel milk cans designed and manufactured by the John Wood Company.

There's probably no one that has more experience and know-how with Stainless Steel fabrication than the John Wood Company. At eight different plants in the U. S. and Canada, the company makes everything from gasoline pumps to milk strainers. At their St. Paul plant they are equipped to produce 50% of the Stainless Steel can requirements for the entire dairy and dispenser industries.

The company worked closely with sanitation experts and health officials to design a Stainless Steel can that meets the strictest regulations for both material and workmanship. And at the same time, they found ways to simplify fabrication and save time and materials. They developed methods of hydraulic forming, welding, grinding and polishing that have paid off in lower costs and a quality product. These Stainless cans have a hard, durable finish that is easy to clean, ready for long, sanitary service. The John Wood Company proved that Stainless Steel isn't difficult to fabricate, it's just different.

If *you* would like to have complete information about working with Stainless Steel, write for a free copy of our *Stainless Steel Fabrication Book*. United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania. *USS is a registered trademark*

USS

United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

another G-E
Project '8000'
development

GENERAL ELECTRIC ANNOUNCES . . .

New Custom '8000'* Motors

PROJECT '8000' . . . a major General Electric program of research, redesign, advanced manufacturing and improved customer service on A-c motors 150 to 6000-hp.

*Trademark of General Electric Co.

CUSTOM DESIGNED . . . New General Electric Custom '8000' motors are built specifically to meet your requirements. Selecting from specially designed enclosures, advanced insulation systems, custom-designed end shield and bearing constructions, and more than 15 custom-designed accessories—plus a countless number of electrical designs—General Electric engineers will create a motor to meet exacting needs, provide initial and continuing economy, and give long, reliable service. Turn page for features of new Custom '8000' motors.

NEW CUSTOM '8000' MOTORS GIVE TOP PERFORMANCE WITH LESS MAINTENANCE HERE'S WHY

GENERAL ELECTRIC

FROM GENERAL ELECTRIC . . .

another G-E PROJECT '8000' development

NEW Custom '8000'* Motors Give Greater Reliability Require Less Maintenance

1. **LONGER INSULATION LIFE**—Pre-wound core allows closer quality control and gives longer insulation life through improved varnish impregnation or silicone rubber encapsulation.
2. **BETTER CONSTRUCTION**—Cast iron frame withstands 20G simulated transportation shock tests; resists corrosion.
3. **FASTER INSTALLATION**—Conduit box has up to 3 times volume of ordinary boxes; lifting lugs, cast to frame, hold up to 12 times motor weight.
4. **EASIER MAINTENANCE**—Flat end shields are more adaptable to addition of accessories or modifications; are lighter—easily handled by one or two men.
5. **BETTER COOLING**—Double-end ventilation, new duct design and louvred air openings provide more efficient air distribution through motor, reduce hot spots.
6. **LOWER NOISE LEVEL**—Sound power has been cut up to 50% by redesigning frame sections, rotor fans, air deflectors and intakes.

A New Profile in A-C Motors
150 to 6000-hp

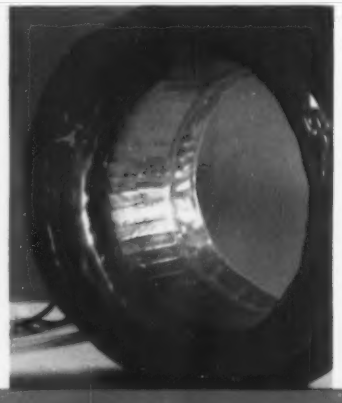
FOR COMPLETE INFORMATION and availability dates about General Electric's new Custom '8000' motor line, contact your nearby Apparatus Sales Office, or write for bulletin GEA-6865, Section 884-2, General Electric Co., Schenectady, N. Y.

NEW Polyseal* SILICONE RUBBER INSULATION SYSTEM IS AVAILABLE ON CUSTOM '8000' MOTORS

Silicone rubber used in Polyseal insulation systems is a product of General Electric's Silicone Products Dept., Waterford, N. Y. . . . a leader in research, development, and manufacture of silicone materials. Supported silicone tape is a development of General Electric's Insulating Materials Dept., Schenectady, N. Y. Combining silicone rubber with dacron-glass supporting materials is a major engineering advancement, giving this material both the mechanical and dielectric strength required for use as a motor insulation. Polyseal insulation systems are available *only* on General Electric motors. Medium AC Motor & Generator Dept.

FORM-WOUND MOTORS

Polyseal supported silicone rubber insulation system provides greater mechanical, thermal, voltage and environmental endurance than unsupported silicone rubber. Glass fabric materials are imbedded in each layer of silicone tape, which, after coil wrapping is vulcanized under heat and pressure to seal the system against moisture and contaminants. General Electric form-wound open motors with Polyseal insulation system can be used in some severe atmospheres formerly reserved for totally-enclosed motors.



RANDOM-WOUND MOTORS

Polyseal silicone insulation system offers greater flexibility and better heat transfer than existing encapsulations . . . it operates effectively from —90C to 200C and will not crack under excess thermal cycling or severe moisture. After receiving G.E.'s standard random-wound insulation treatments, Polyseal insulation is applied to stator and end turns, completely sealing windings with a thin, waterproof, inert covering which protects against extreme moisture, most chemical fumes, dust and corrosion.

*Trademark of General Electric Co.

Progress Is Our Most Important Product

GENERAL ELECTRIC

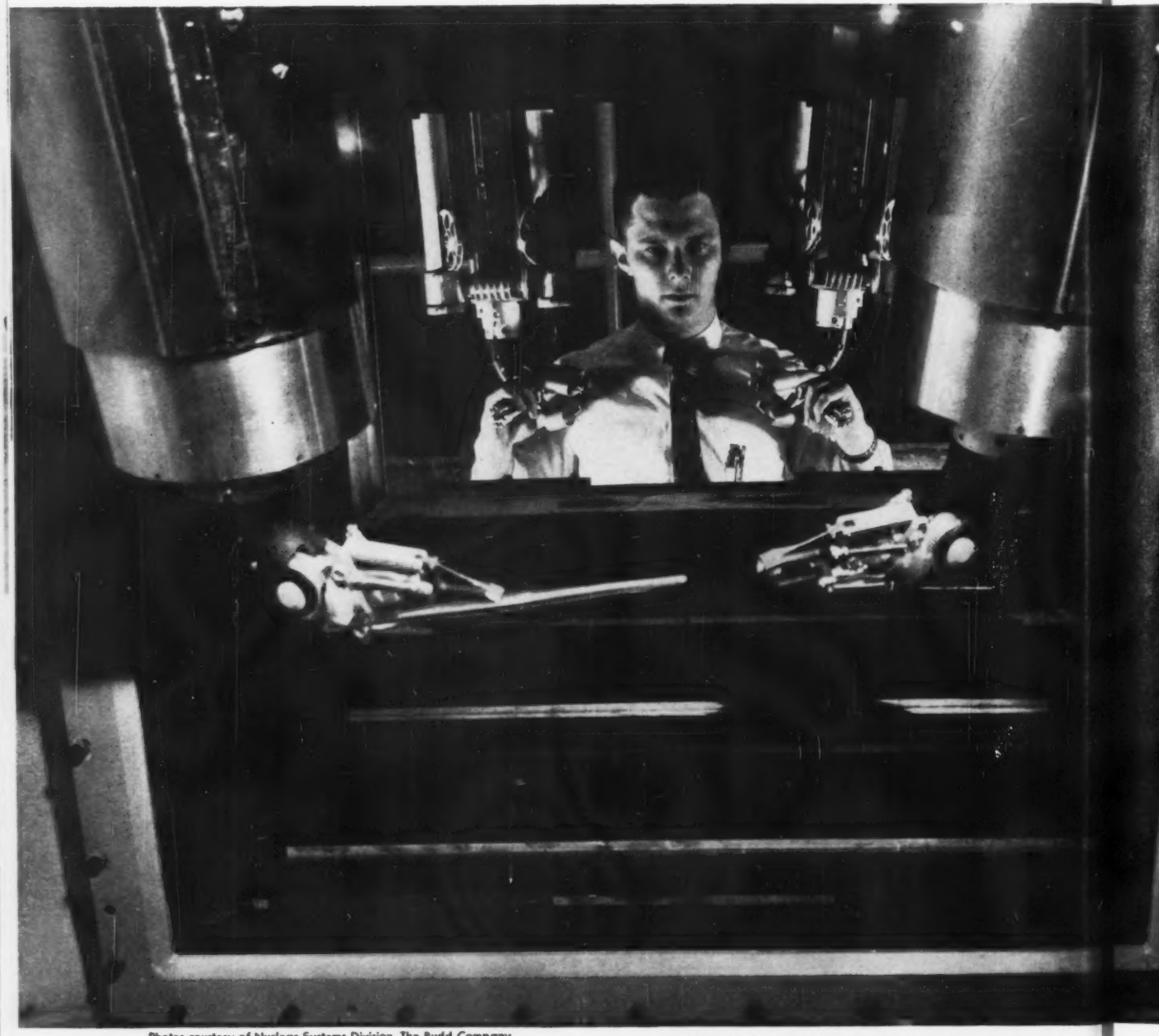
Costs down, production up with Continuous-Cast Bronze Castings. Asarco's continuous-cast shapes can save you money many ways. And help you toward a better product in the bargain! The alloys produced by continuous casting meet the same specifications as other castings but in performance, they're measurably superior in strength and hardness. Second, there's no greater production efficiency than working with the shapes you want in the continuous lengths you want, in dimensions closer to final finished parts. Asarcon® 773 (SAE 660), general purpose bearing bronze, is immediately available from stock in 260 sizes, rods and tubes, up to 105″ lengths, ½″ to 9″ diameters. Special shapes can be made to order. Write: Continuous-Cast Products Department, American Smelting and Refining Company, Perth Amboy Plant, Barber, New Jersey, Whiting, Indiana. West Coast Distributor: Kingwell Bros., Ltd., 457 Minna St., San Francisco. In Canada: Federated Metals Canada, Ltd., Toronto and Montreal.

CONTINUOUS-CAST DEPARTMENT OF

ASARCO

AMERICAN SMELTING AND REFINING COMPANY

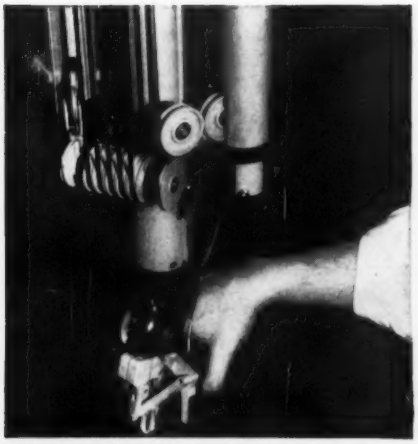
How NS solved another special steel problem



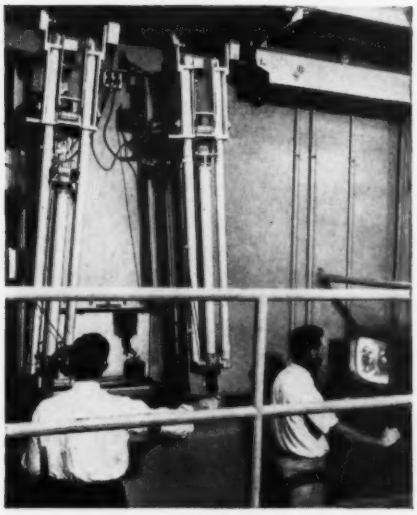
Photos courtesy of Nuclear Systems Division, The Budd Company

RADIOACTIVE MATERIAL is handled remotely by operator from behind three-foot thick lead-glass wall. Nilcor strips, which make quick, accurate system response possible, can be seen running vertically from pulleys just above operator's hands.

SPECIAL NS-ATHENIA STEEL PUTS LIFE IN ATOMIC-AGE ROBOT



HAND MOVEMENTS at operator end of master-slave system are translated without distortion, or time lag through seven Nilcor strips (shown in photo) that travel through 15-foot belt and pulley system.



OPERATOR STATION, shielded by protective wall, has television monitor screen where action inside radioactive room is reproduced as operator manipulates controls of master-slave system.

To manipulate radioactive materials with lifelike dexterity, from the other side of a three-foot thick protective wall, requires robot controls with a high degree of precision and quick response.

Ordinary cable or belt arrangements gave too much stretch between the operator's "master" hand movements and the identical "slave" movement at the other end of the system. Movements had to be translated almost instantaneously and duplicated exactly at the slave end of the system. To help solve this problem, robot system manufacturers came to the Athenia Steel Division of National-Standard to find a strip material that would serve in the belt-and-pulley arrangement of the mechanism with minimum stretch and friction and without backlashing or overshooting.

NATIONAL-STANDARD ENGINEERS at Athenia in Clifton, N. J., recommended Nilcor* strip (basically a cobalt-chromium-nickel alloy) because of its high fatigue resistance, high tensile strength and exceptionally high corrosion resistance—plus less than ⅛-inch lateral sweep per 8-foot length when laying flat without tension. Experiments with .005 Nilcor strip in the robot systems showed an 80% reduction in stretch and 90% reduction in friction over standard wire materials.

EXPERIENCED ENGINEERING HELP of this kind, for jobs requiring specialty steel and wire to meet unique applications, is available to *you* from National-Standard. For the many thousands of applications where only specialty steel or wire will solve the problem, let National-Standard engineers go to work for you. Write for additional information to National-Standard Company, Niles, Michigan.

*Trade Mark

Manufacturer of Specialty Wire and Metal Products

NATIONAL STANDARD

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; tire wire, stainless, music spring and plated wires • **WORCESTER WIRE WORKS** Worcester, Mass.; high and low carbon specialty wires • **WAGNER LITHO MACHINERY,** Secaucus, N. J.; metal decorating equipment • **ATHENIA STEEL,** Clifton, N. J.; flat, high-carbon spring steels • **REYNOLDS WIRE,** Dixon, Ill.; industrial wire cloth • **CROSS PERFORATED METALS,** Carbondale, Pa.; decorative, commercial, and industrial perforated metals.

Don Chisholm solved a double problem at Split Ballbearing . . .

It all started with a torque tube bearing for one of the top priority missile guidance systems. Two kinds of trouble had developed during the manufacturing process and engineers at the Split Ballbearing Division of Miniature Precision Bearings, Inc., Lebanon, N. H., were in a hurry to get both of them straightened out.

First, in bore-grinding the inner race, about .010" of stock had to be removed, but the tolerance specified was a microscopic ±.0001 and an eight microinch finish was mandatory. The bore-grinding wheel used wasn't up to requirements and the reject rate was excessive.

Second, in lapping the faces of both races, the wheels used were not producing the required five microinch finish, there was an imbalance between the amount of stock removed from the upper and lower surfaces . . . and, on top of that, the wheels themselves broke down too rapidly.

Bay State was called in and Abrasive Specialist Don Chisholm attacked the problem, working closely with Distributor Harold Domingue, Abrasives & Tools, Inc., Auburn, Mass. They not only cured both troubles and brought production up to the standards required . . . the people at Split Ballbearing were so delighted they asked Chisholm and Domingue to make a survey of every grinding operation in the plant. This led to fourteen other carefully considered recommendations.

Like Hal Domingue and Don Chisholm, the Bay State people in your area are trained specialists. Whether you have a single problem or a multitude of them, they're ready to apply experience, imagination and plain hard work. *Better grinding at lower cost . . . that is their business.*

Skill and experience play a vital part in maintaining the ultra-precise standards demanded by Split Ballbearing customers. Here, the company's senior machine operator, Emory Malloch, loads the fixture plate in the big production lapping machine with torque tube races.

Examining the precisely lapped finish on a pair of bearing races are Frank Orth (left), Chief Industrial Engineer at Split Ballbearing, and George R. Morin, Factory Manager.

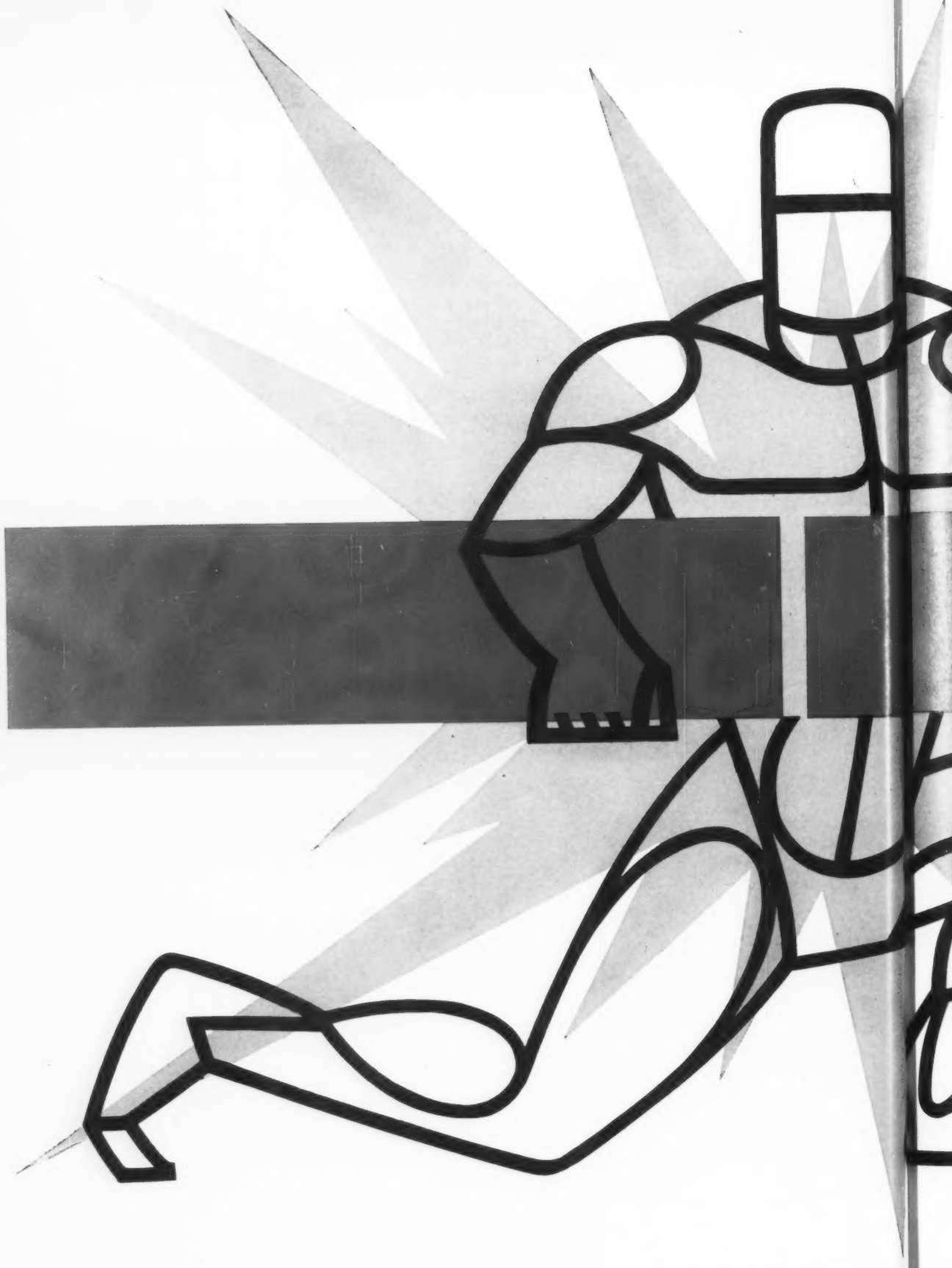
and they gave him 14 more!

Don Chisholm has built a formidable reputation for solving tricky abrasive problems. Prior to joining Bay State as an abrasive specialist, he spent 17 years as Abrasive & Tool Coordinator at General Electric's turbo-super-charger and jet engine plants where his experience was extremely varied since he had to use abrasives on unusual alloys as well as the general run of industrial metals.

BAY STATE ABRASIVES

BAY STATE WHEELS of PROGRESS

Bay State Abrasive Products Co., Westboro, Massachusetts.
In Canada: Bay State Abrasive Products Co., (Canada) Ltd., Brantford, Ontario.
Branch Offices: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh, Los Angeles. *Distributors:* All principal cities.



COMBINES SUPERB WELDABILITY WITH EXTRA STRENGTH

N-A-XTRA

BEST LOW-ALLOY EXTRA-STRENGTH STEEL YOU CAN BUY

When only the strongest steels will do, specify N-A-XTRA HIGH-STRENGTH. This low-alloy heat-treated steel is now available in minimum yield strengths ranging from 80,000-110,000 psi.

Along with this great strength, N-A-XTRA is readily formed and fabricated. It can be welded by any process. The most drastic welding tests on N-A-XTRA have shown no underbead cracking, even when plate temperatures are as low as —60°F.

Because N-A-XTRA is nearly three times stronger than mild carbon steels, it gives designers an opportunity to eliminate useless dead weight from finished products and realize substantial savings. Let us show you how N-A-XTRA HIGH-STRENGTH steel can do a job for you. Write Great Lakes Steel Corporation, Detroit 29, Michigan, Dept. A-7.

GREAT LAKES STEEL

A DIVISION OF NATIONAL STEEL CORPORATION

Best chain choice

for the hot and heavy jobs

You can increase the life-span of your conveyors with LINK-BELT Class SMGL and 1100 chains

Where operating conditions involve heat and hard service beyond the ordinary, you need the *extra*-ordinary stamina of these Link-Belt chains.

CLASS SMGL combination chains are designed specifically for furnace conveyor service. Sidebars and center links are made of "file-hard" Promal, with bosses on sidebars to reduce stress on free-floating pins. CLASS 1100 roller chain is ideal for horizontal or inclined rolling elevators and conveyors.

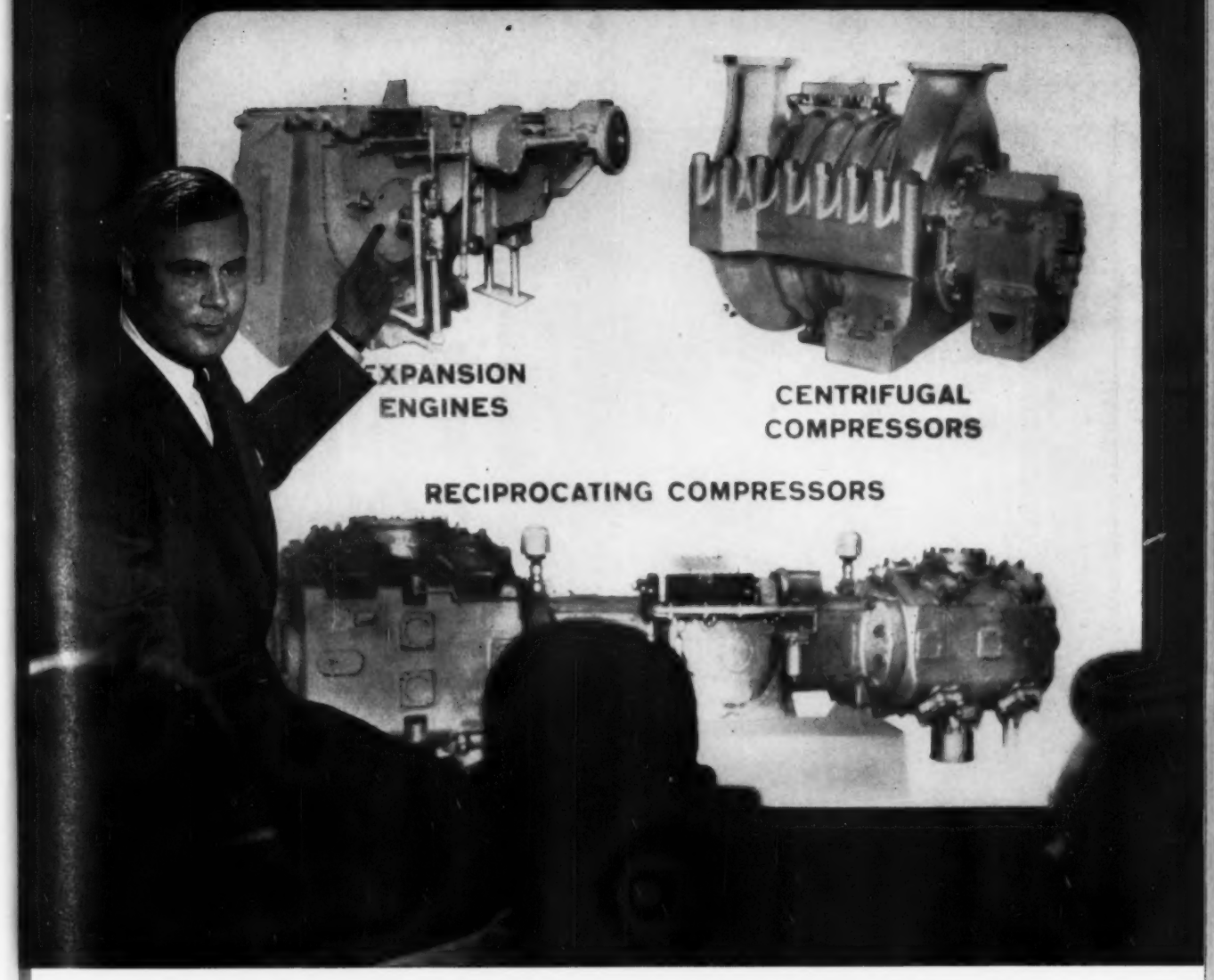
Full design information on both is contained in Catalog 1050. Your Link-Belt representative will counsel on chain selection for high temperature conditions.

Full information on these chains . . . plus a broad line of attachments and sprockets—is contained in Catalog 1050. Get your copy by writing direct . . . or call your nearest Link-Belt office or authorized stock-carrying distributor, listed under CHAINS in the yellow pages of your Phone Directory.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,075



George Edick, *Sales Manager Domestic Division, The Cooper-Bessemer Corporation, displays three types of units for oxygen production and explains...*

How Cooper-Bessemer can help you plan oxygen facilities to improve steel-making

It will pay you to check Cooper-Bessemer when you start to plan oxygen facilities for steel production because:

Unbiased analysis. Since we offer all types and sizes of compressors and expansion engines, we can apply the units best suited to your specific needs.

Integrated installation. We can provide complete engineering service for the entire power-compression-expansion operation, including En-Tronic controls for most economical operation.

Unmatched service. Our outstanding field service and warehouse facilities nearby assure prompt attention to your operating needs...at start-up time and for the years to come.

Call our nearest office for further details.

BRANCH OFFICES: Grove City • New York • Chicago • Washington San Francisco • Los Angeles • Houston • Dallas • Odessa • Pampa Greggton • Seattle • Tulsa • St. Louis • Kansas City • Minneapolis New Orleans • Shreveport • Casper • Gloucester

SUBSIDIARIES: Cooper-Bessemer of Canada, Ltd.... Edmonton • Calgary Toronto • Halifax

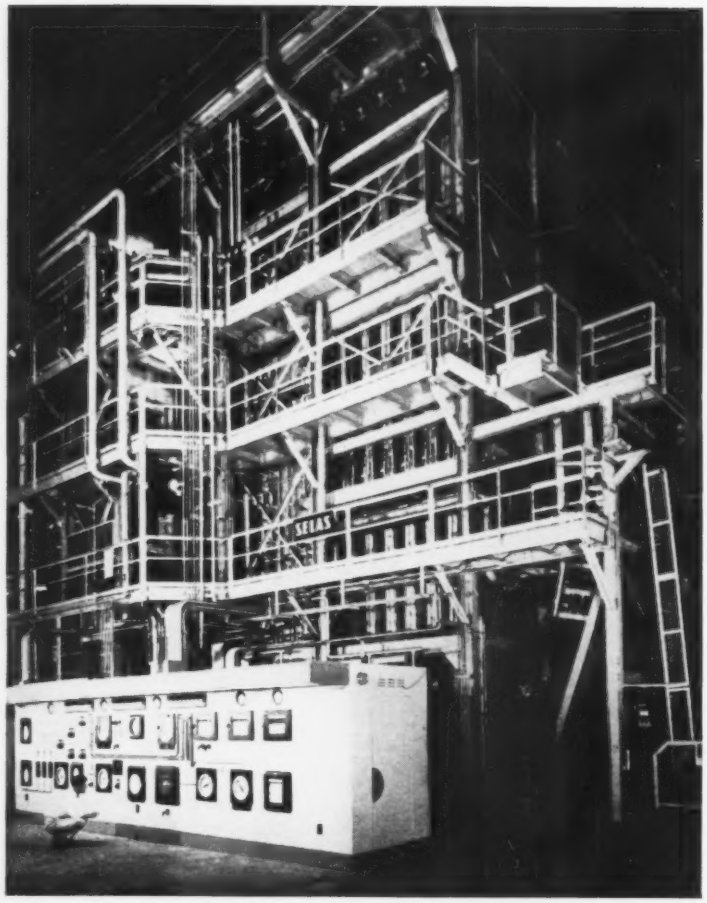
C-B Southern, Inc.... Houston

Cooper-Bessemer International Corporation... New York • Caracas Mexico City

Cooper Bessemer

GENERAL OFFICES: MOUNT VERNON, OHIO

ENGINES: GAS - DIESEL - GAS-DIESEL
COMPRESSORS: RECIPROCATING AND CENTRIFUGAL, ENGINE OR MOTOR DRIVEN



SELAS GRADIATION®

Precise Heat Processing for the Steel Industry

STRIP is continuously bright-annealed in this 15 ton/hr, single-pass, direct-fired furnace. Four such compact lines, installed across a standard mill building, provide an eastern steel mill 400,000 tons per year increased capacity. Another installation produces 30 tons/hr; even higher rates can be readily attainable. Designed for fast, uniform heating, Gradiation strip lines are compact, easy to install, simple to operate, economical to maintain. Front panel of control cubicle functionally delineates entire process.

Throughout the steel industry — in mills and metalworking plants—Selas Gradiation heat processing is successfully used in many operations. The versatility and adaptability of the Gradiation principle are demonstrated by the diversity of applications shown in the installation photographs on facing page.

Gradiation is a concept and technique of heat processing which coordinates fast, controlled heating with the nature of the workpiece . . . considering its composition, size, shape, heat transfer characteristics and physical properties . . . to develop desired product quality, in minimum time, with maximum efficiency, and with the use of automatic and compact equipment.

Designed and custom-built to meet your specific heat processing needs . . . for hot working . . . galvanizing . . . tinning . . . heat treating heavy sections and special shapes . . . Gradiation equipment contributes production economy, high production rates, ease of handling.

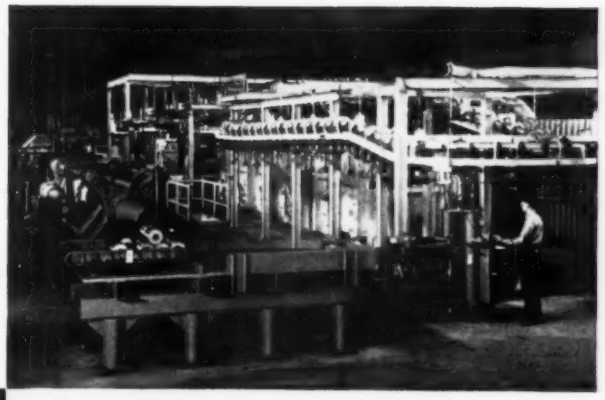
Selas Engineers will be pleased to discuss your heat processing needs with you and to show you how Gradiation can be adapted to your particular requirements.

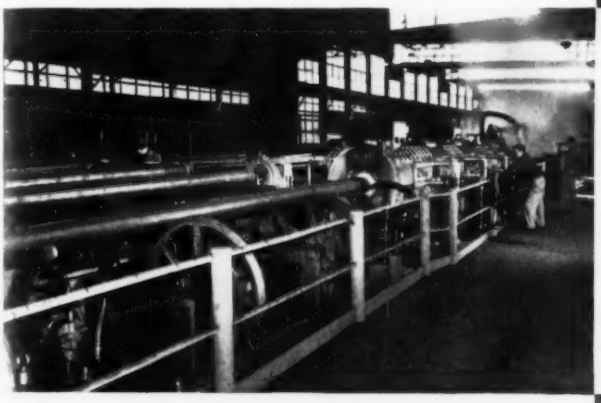
Send for our new 28-page Bulletin No. 17 "Selas Gradiation Heating in the Steel Mill" and article reprint "An Economical Appraisal of Continuous Heat Processing."

SUBSIDIARIES: Selas Constructors, Inc., Houston, Texas; Selas Corporation of America, European Div., S. A., Pregny, Geneva, Switzerland.
INTERNATIONAL REPRESENTATIVES AND LICENSEES: CAMBODIA, FORMOSA, KOREA, LAOS, VIETNAM—Casa Export Co., Inc.; AUSTRIA GERMANY—Indugas, Essen; JAPAN—International Machine Co., Ltd., Tokyo; ITALY—Italiana Gasogeni E. Forni S.r.l., Milano.

is your reward

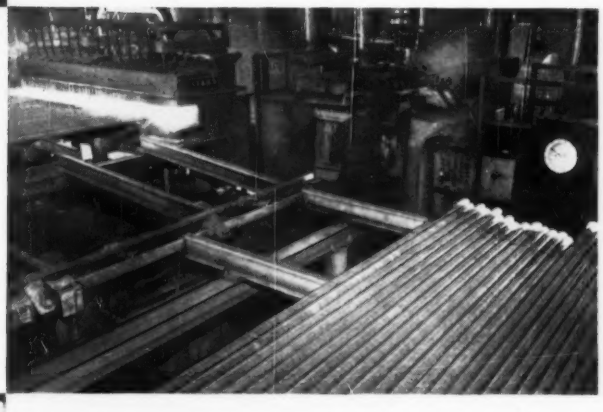
STAINLESS STEEL BILLETS, 5¾ to 8 in. in diam and from 9 to 28 in. in length, are heated for extruding into tubes, in this Selas direct-fired furnace. Billets are welded to studs for simplified handling on monorail conveyor system. Fully automatic control of heat input and temperature measurement assures preciseness and uniformity of temperature in billets, essential to achieving dimensional accuracy of extruded tubes.

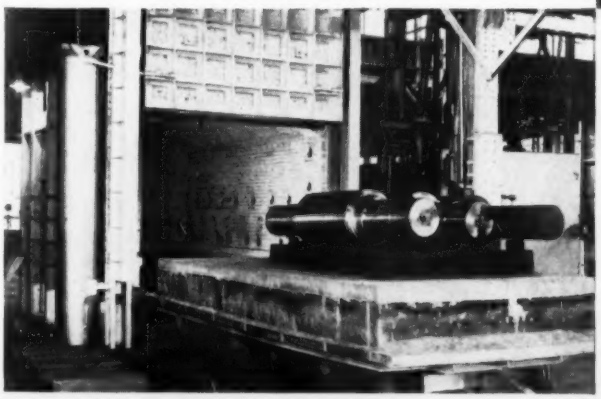




SEAMLESS TUBING is hardened and tempered in this Selas barrel-furnace line to produce oil-well casing for the petroleum industry. The pipe is heated to 1600°F in five barrel furnaces, quenched by an annular water spray unit, then tempered in succeeding five barrel furnaces. Rotation of the pipe during its forward motion (during heating and cooling) assures uniformity of metallurgical properties and straightness. Pipe 5 in. to 9⅝ in. O.D. is handled in this completely automated line.

TUBE-ENDS are heated for upsetting (for subsequent threading) in this slot-type Selas furnace. As each tube-end is fast heated to 2300°F, the tubing automatically moves down the handling table to the upsetting machine. The direct-fired Duradiant® gas burners are patterned to assure temperature uniformity within a limited area of each tube-end.





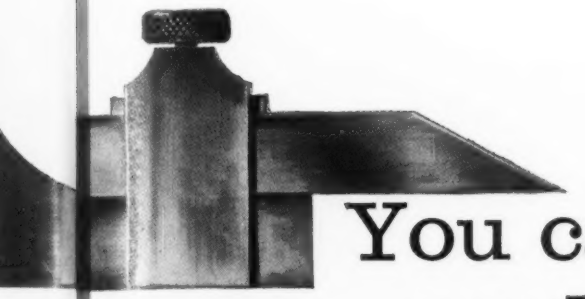
CAST-STEEL ROLLS and other alloy steel castings are annealed in this Gradiation-fired car-bottom furnace, at Ohio Steel Foundry, Lima, Ohio. Preciseness of control and uniformity of heating enables prescribed time-temperature cycles — required in processing the sensitive cast-steel structures — to be followed.

Gradiation and Duradiant are registered trade names of Selas Corporation of America.

SELAS *Heat and Fluid Processing Engineers*
CORPORATION OF AMERICA
DRESHER, PENNSYLVANIA
DEVELOPMENT • DESIGN • CONSTRUCTION

The Norton Measure of Value . . . the true measure of savings on materials you buy for your production is the cost-per-piece produced.

Call your Norton Man — he has the experience, the products, and knows how to save you money where it counts. There's a Norton expert in the fields of — abrasives . . . grinding machines . . . refractories.



You can produce greater savings than you can buy

You can't recognize a value by its price alone. This is true of all types of grinding wheels and has special significance in diamond wheels in view of their high initial cost.

The price tag on a diamond grinding wheel may appear to be a good "buy," but the real consideration should be what will you get for your money?

Less expensive diamond grinding wheels than Norton wheels may save you money on immediate cost. But if the lower cost wheels do not perform their jobs efficiently or cause production delays because of poor quality or wheel misapplication — the price you paid is too much.

The only accurate measure of the value of any grinding wheel is how much it produces for you per dollar cost — not merely how much you paid for it. Here is why Norton diamond grinding wheels are worth more to you —

Norton Company introduced all three diamond wheel bond types, does all its own sizing and checking of diamonds — duplicating wheel specification with constant accuracy. Norton certifies the carat content, assuring full value for your money. Whether the diamonds you use in carbide grinding are mined or man-made, Norton gives you the most advanced research engineering and manufacturing facilities in the entire abrasive field. And you get this great scope of detailed knowledge on a personal basis — your Norton Man.

Your Norton Man starts his career by spending a minimum of one year in a carefully planned training course in the Norton plant and a comparable period of training in the field. The Norton Man has an average of 15 years' abrasive experience in addition to the specialized training. He is the most knowledgeable man in abrasives that you can consult. Make him your consulting abrasive engineer.

Ask him to make an Abrasive Requirement Study for you. This study lists the correct specifications for each abrasive job in your plant to assure you lowest cost-per-piece produced. He is also available for complete field testing on specific problems. For example —

Your Norton Man can increase production by pointing out ways for more effective wheel usage. He has the widest selection of grinding wheels in the industry from which to select the best wheel for new product grinding operations and for improving your current grinding jobs — both at the lowest cost. And with Norton grinding wheels you can be sure of precise duplication order after order.

Norton offers true abrasive economy. Economy that pays off in lower cost-per-piece produced. Call your Norton Man. NORTON COMPANY, General Offices, Worcester 6, Massachusetts. Plants and distributors around the world.

W-1917

NORTON

ABRASIVES

Making better products... to make your products better

Illustrated above are only a few of the many different sections in the standard range held. In point of fact, almost any practicable shape can be supplied on request.

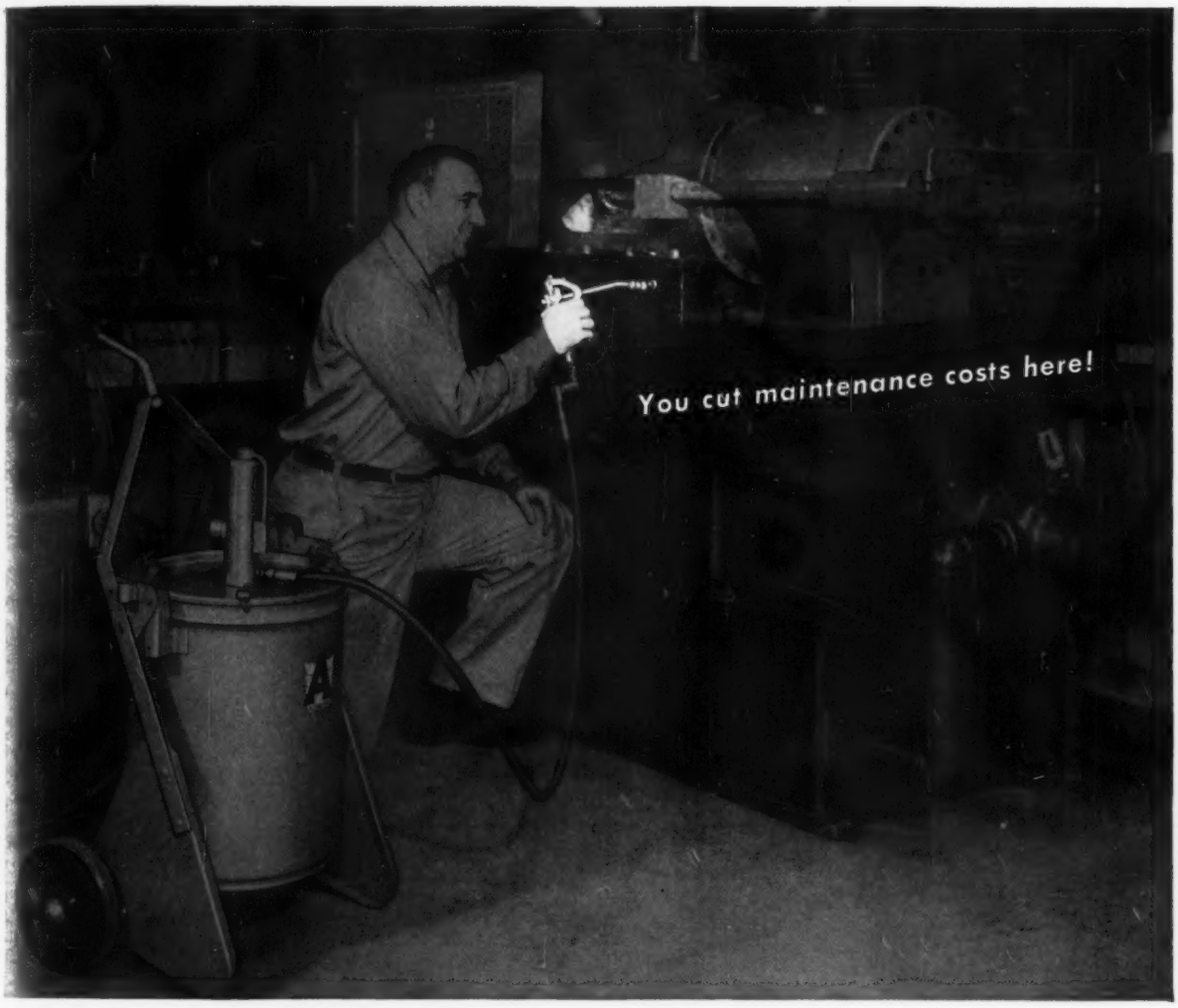
THOS. W. WARD LTD

Write to Overseas Trade Dept. I. A.
HEAD OFFICE: ALBION WORKS, SHEFFIELD, ENGLAND
Cables: Forward, Sheffield

London Office: Brettenham House, Lancaster Place, Strand, W.C.2.

Have you received your current copy of The Albion Machinery Catalogue? If not, write for one today. This catalogue contains a comprehensive stock list of all new and secondhand Plant and Machinery, including Machine Tools, Contractors' Plant, Generating Sets and Pumps. It is regularly brought completely up to date and reprinted.

GELTL



Alemite Portable Lubricator Saves 95 Man-Hours For Every Drum of Lubricant Applied!

Every point of lubrication in your plant can cost you needless time and money if you use old-fashioned hand lubrication methods!

With this Alemite portable air-powered lubricator, you save *95 man hours* for every 400-lb. drum of lubricant applied. Over *two* weeks of one man's time saved. That's how you can cut maintenance costs with Alemite.

In addition, Alemite's Model "711-A" is so compact and portable that it can bring clean, waste-free lubrication to *any* machine—*anywhere* in your plant—reducing machine downtime and prolonging machine life. Its pivot-swing dolly holds container upright at any pulling angle for easy moving over rough ground, indoors over rough floors, even up and down steps!

Step up to fast-moving, time-saving lubrication methods! Check Alemite's complete line of air-powered and electric-powered lubrication equipment for industry.

Symbol of SW Excellence

ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

1850 Diversey Parkway, Chicago 14, Illinois

—MAIL COUPON FOR COMPLETE INFORMATION!—

Alemite, Dept. G-79
1850 Diversey Parkway, Chicago 14, Illinois

Please send me your free catalog of Alemite industrial lubrication equipment.

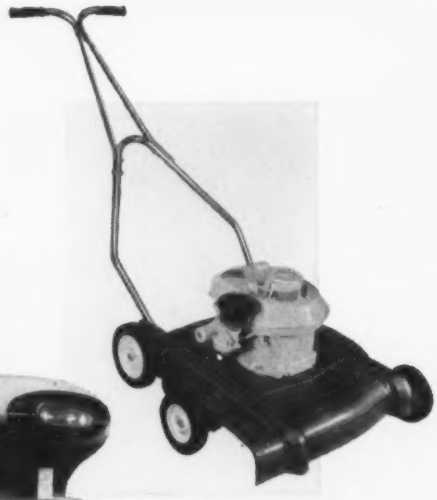
Name .....

Company .....

Address .....

City ..... Zone ..... State .....

When you buy aluminum for your product...



Lawn mowers

Trains

Reflective sheeting on aluminum

for custom service check with ANACONDA ALUMINUM

Your product and scheduling requirements become the dictates of every Anaconda Aluminum specialist the minute your order is written. Their follow-through is what we call custom service.

Because of the extreme flexibility designed into all Anaconda Aluminum's modern production facilities, your order—large or small—is scheduled promptly, shipped on time. Every order receives the personalized attention of experienced aluminum craftsmen throughout production—added assurance that precision controls maintain your critical specifications.

In addition to the satisfaction of such custom-shop service, Anaconda Aluminum gives you all the advantages of integrated production with a full range of products—pig and ingot, coiled and flat sheet, rod, bar, structurals, tubular and other extruded shapes. For custom service on your next order, call your Anaconda Aluminum representative, or write our General Offices, Dept. IA-7, Louisville 1, Kentucky.

Every industry has one member who specializes in customer satisfaction

ANACONDA ALUMINUM

ANACONDA ALUMINUM COMPANY • • GENERAL OFFICES, LOUISVILLE, KENTUCKY

Hoover pillow blocks with ductile cast housings

Hoover introduces a new, economical pillow block ball bearing unit with cast housing of ductile material that absorbs shock and vibration, assuring long bearing life. It is designed to carry light loads at normal speeds.

The unit contains a pre-lubricated bearing featuring ultra-smooth *Hoover Honed* raceways and a perfectly matched set of *Micro-Velvet* balls, a guarantee of unexcelled quality. Known as the E D series, these new pillow block bearings are available in shaft sizes from ½" to 1 3/16".

Hoover also offers a cast iron pillow block bearing for light to medium load conditions, plus a wide range of flange and machine units.

hoover
BALL AND BEARING COMPANY
5400 South State Road, Ann Arbor, Michigan
Sales Offices and Warehouses: 2020 South Figueroa, Los Angeles 7, California | 290 Lodi Street, Hackensack, New Jersey

Hoover Honed and *Micro-Velvet* are Hoover trademarks.

NEW BULLETIN 106 DESCRIBES COMPLETE LINE OF NEW HOOVER PILLOW BLOCK BALL BEARINGS!

Please return coupon for your copy

Hoover Ball and Bearing Company IA-7.
5400 South State Road, Ann Arbor, Michigan

Please send new Bulletin 106, which describes Hoover pillow block ball bearings.

Name_____
Title_____
Company_____
Address_____
City_____ Zone_____ State_____

Eyes of the fleet

To search out the enemy task force, and act as a mobile early warning station. This is the mission of the Triton — the Navy's largest submarine and the newest atomic-powered member of the Silent Service.

Measuring 447 feet in length, the Triton, built by General Dynamics Corporation's Electric Boat Division, is officially known as a radar picket submarine.

The Triton carries with her two contributions from National Tube—National Seamless Pipe and Tubes in both carbon and stainless steels and National Seamless Steel Cylinders. National Seamless Steel Cylinders are used to house compressed oxygen and to store compressed air for torpedo firing.

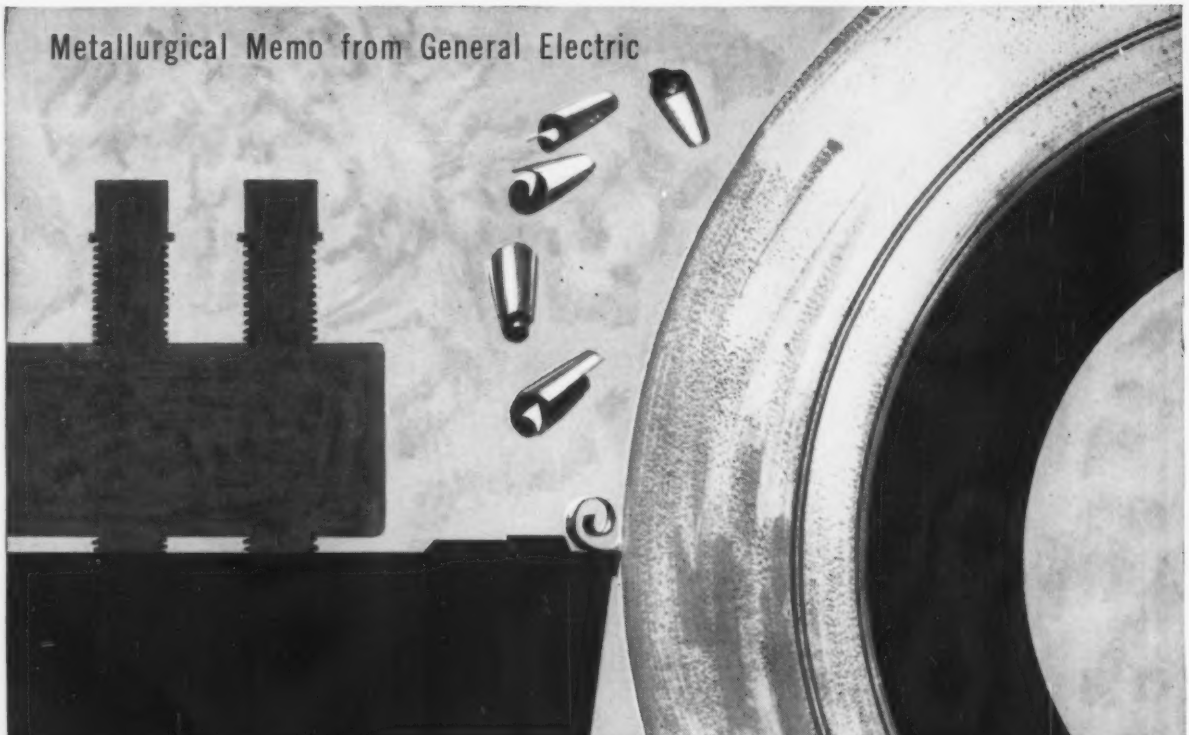
This is another significant achievement for National

Tube. In almost every type of tubular installation aboard ship, from stem to stern, you'll find National Tube is more than qualified to handle your most difficult problems. Remember, for more than 80 years, National Tube has been a leader in the manufacture of tubular products for all types of building and industrial uses generally. For more information, write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS and National are registered trademarks

National Tube Division of USS United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York



Why 242 different toolholders?

Metallurgical Products Department reports on an expanded new line of Lift-O-Matic toolholders . . . 242 sizes to speed changeovers on every job

Nobody needs to tell you what carbides have done for metalcutting . . . or how Carboloy® disposable inserts have led the way. *But making inserts is only half the job;* the other half is to provide you with toolholders that let you get full value from these miracle metals.

Carboloy Lift-O-Matic toolholders do this job. There are now three types—positive rake, negative rake, and tracer. All provide access to the clamp setscrew from either top or bottom—together with a self-raising chip-breaker clamp—for fastest possible indexing. All cut your inventory needs by providing interchangeability of parts. In addition, there is a full line of Carboloy *heavy-duty* toolholders.

This expanded Lift-O-Matic toolholder line is stocked by your *local* Authorized Carboloy Distributor—3 types, 9 styles, 242 sizes—*plus* the widest range of styles, sizes, and grades of *inserts* in the industry. Call him (see the Yellow Pages under "Carbides"); or write: *Metallurgical Products Department of General Electric Company, 11153 E. 8 Mile Road, Detroit 32, Michigan.*

CARBOLOY
CEMENTED CARBIDES

METALLURGICAL PRODUCTS DEPARTMENT

GENERAL ELECTRIC

CARBOLOY® CEMENTED CARBIDES • MAN-MADE DIAMONDS • MAGNETIC MATERIALS • THERMISTORS • THYRITE® • VACUUM-MELTED ALLOYS

This Standard Oil product made better grinding possible at Cessna

Aircraft Company's Industrial Products Division licked three problems with ARGON Oil No. 4

Situation: A fluid used in grinding operations at this Cessna plant at Hutchinson, Kansas, was creating three problems:

1) It washed the lubricant from regulator wheels and grinding fixtures, causing them to freeze.
2) It caused build-up of deposits.
3) It stripped paint from machine surfaces.

What was done: Cessna management called in a Standard Oil lubrication specialist who recommended ARGON Oil No. 4 in ratios of 100 and 150:1 for test. The coolant was tested in two centerless grinders for two months.

What happened: All three conditions which were hampering operations were cleared up when the switch was made to ARGON Oil No. 4. Cessna also found that work remained rust-free after passing through the machines, something that had not been the case before. They also found that the coolant didn't foam. With no foam, more of it stayed on the wheel, resulting in cooler operation. Faster cuts were obtained with finer wheels. All 12 grinders in the Cessna shop were then converted to ARGON Oil No. 4.

What you can do: Get more facts about ARGON Oil No. 4 from the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

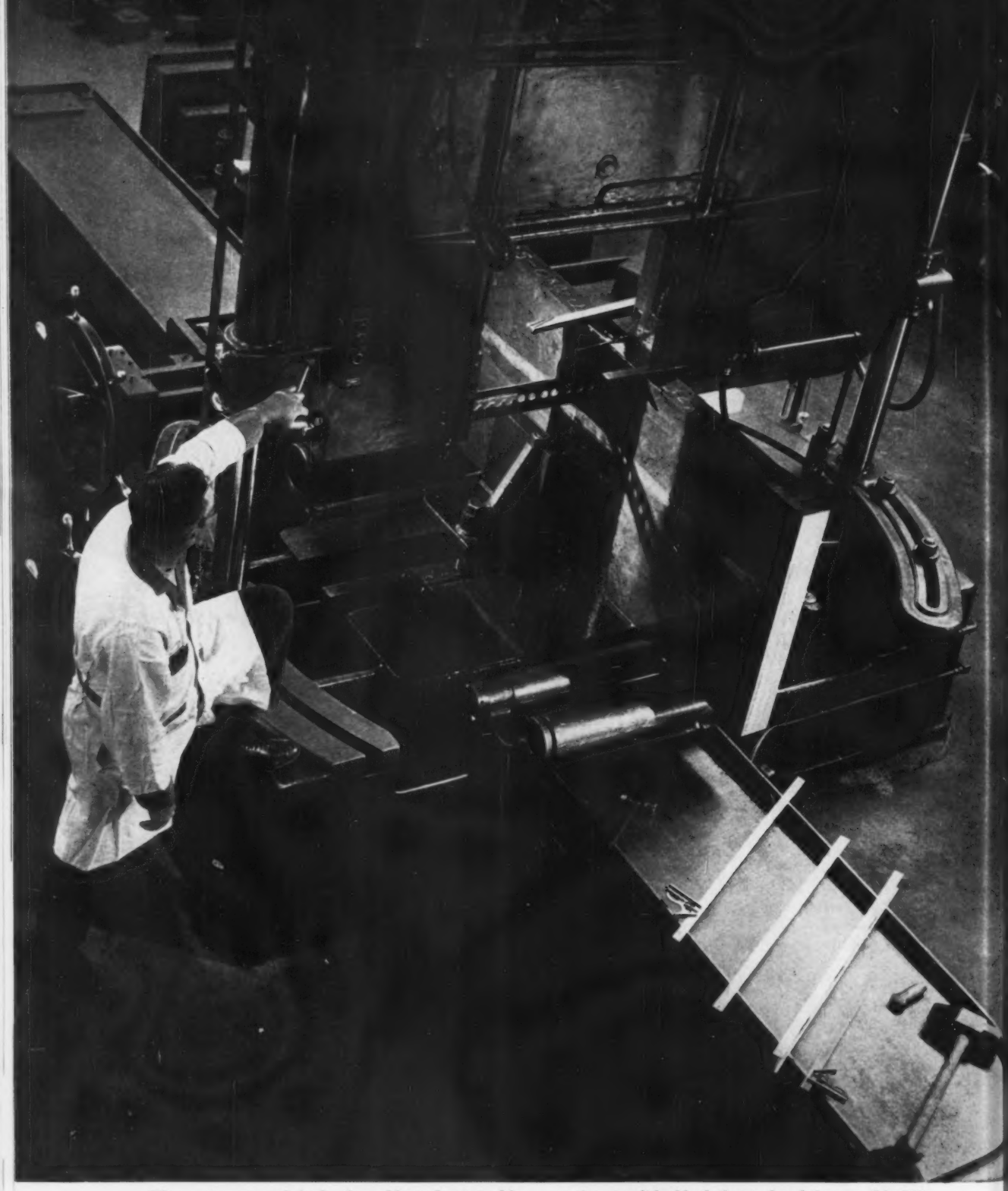
Jerry Croes, Standard Oil staff engineer, Paul Hoyer, Cessna section superintendent and Bill Ray, Standard Oil lubrication specialist (l. to r.) inspect rust-free finish after grinding with ARGON Oil No. 4 while J. E. Petrie (far left), operator, looks on. Both Jerry Croes and Bill Ray have plenty of experience in this sort of work. Jerry has been at it for 16 years. He has an engineering degree from South Dakota School of Mines & Technology and has completed the Standard Oil Sales Engineering School. Bill has six years service working with industrial customers.

Quick facts about **ARGON Oil No. 4**

• Clear, transparent fluid • Able to control corrosion and rust on work and machines • All chemical. Does not support bacteria growth • Unaffected by humidity • Fire resistant • Odorless

You expect more from **STANDARD** *and you get it!*

integrated CRUCIBLE steel service



The customer needed plastic mold steel cut to his specs as fast as he could get it. The Crucible warehouse confirmed his order, gave him immediate delivery because it had both the steel and the saw (big 24" x 42" hacksaws which can slice a 40" block in 4-4½ hours).

maintains a variety of local facilities for handling customers' special requirements

"We *regularly* rely on the Crucible warehouse's equipment. Why, it would take us all day to cut steels they can cut in minutes. We've tried to do these cutting jobs ourselves and, frankly, we lose money nearly every time."

This purchasing agent's words are probably typical because countless companies, all over the country, rely on the 31 local Crucible warehouses for handling their special needs. Unusual cutting of specialty steel grades and sizes is just an example. Or, if a warehouse can't handle extras, such as forging, grinding, machining, boring, polishing, etc. itself, it arranges to have them done conveniently and economically outside.

It's entirely possible that your plant has these facilities. Even so, it can pay you to find out what the local Crucible warehouse has to offer. As one materials buyer put it:

"We have a 'get to know the suppliers' policy. I've visited the Crucible warehouse personally and made a list of its equipment. Here it is—under 'Suppliers' Facilities.' Two weeks ago, when all our saws were tied up, we had the Crucible warehouse cut the steels. They did it immediately, so my list paid off."

All Crucible warehouses maintain stocks, services and facilities to serve you. If you'd like to know more about them, phone or visit the warehouse nearest you—*any time.* Its facilities and services are part of Crucible's integrated operation, from ore to mill and warehouse delivery to you. *Crucible Steel Company of America, Dept. PG06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

Customers' Master Files quickly give Inside Account Salesmen details on your receiving schedules and special requirements.

Inside Account Salesmen keep reference sources handy—give you fast breakdowns of analyses, or heat-treating, machining data.

Fleet of trucks and special delivery vehicles maintained at each warehouse ensure prompt, nearby deliveries.

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels

TOOL STEELS—Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS—Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEEL – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS – Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS – bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS – Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

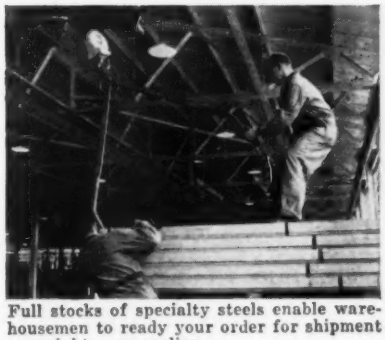
HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

—and many others



Full stocks of specialty steels enable warehousemen to ready your order for shipment overnight—or earlier.

CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Tulsa • Toronto, Ont.

Big Change in Change-Making

New Coin-Dispensing Cash Register Uses Bridgeport Aluminum

Speed and freedom from errors are the features of National Cash Register Company's new register which automatically calculates change and dispenses the proper coins. Change-making becomes twice as fast as with conventional registers. To hold the coins and insure trouble-free operation, National uses a one-piece Bridgeport Aluminum Extrusion for the magazine of the coin dispenser shown to the right.

In furnishing these extrusions, Bridgeport worked closely with National's engineers on the design, which required close dimensional tolerances. This multi-channel extrusion was also produced to meet the tight tolerances specified on flatness and twist. The smooth, bright extruded surface is readily finished by anodizing or painting.

Coin dispensers are just one of many uses where Bridgeport Aluminum Extrusions are helping to improve product design and reduce manufacturing costs. If there's an extrusion in your manufacturing or design picture, ask the nearest Bridgeport Sales Office to show you how our skill and integrated facilities can meet your extrusion requirements. Our new Aluminum Extrusions Handbook is yours for the asking. Write Dept. 2304.

Bridgeport Brass Co.

BRIDGEPORT BRASS COMPANY

Bridgeport Brass Company, Bridgeport 2, Conn. • Sales Offices in Principal Cities

Specialists in Metals from Aluminum to Zirconium

Announcing

Complete Electric Furnace Service

by American Bridge, exclusive manufacturers of the Heroult Electric Furnace

1. Complete new installation

From foundation to furnace, from engineering to erecting, American Bridge is prepared to install a modern, efficient Heroult with minimum inconvenience to your operations.

2. Furnace modernization

American Bridge is prepared to modernize your old Heroult Furnace by installing improved new mechanisms that will increase the efficiency and productivity of your unit.

3. Prompt part replacement

If you own a Heroult (regardless of age), American Bridge is prepared to replace any of its parts. More common parts are carried in stock, others will be made to order. But in either case, we are prepared to give fast service.

For more information, contact our office nearest you

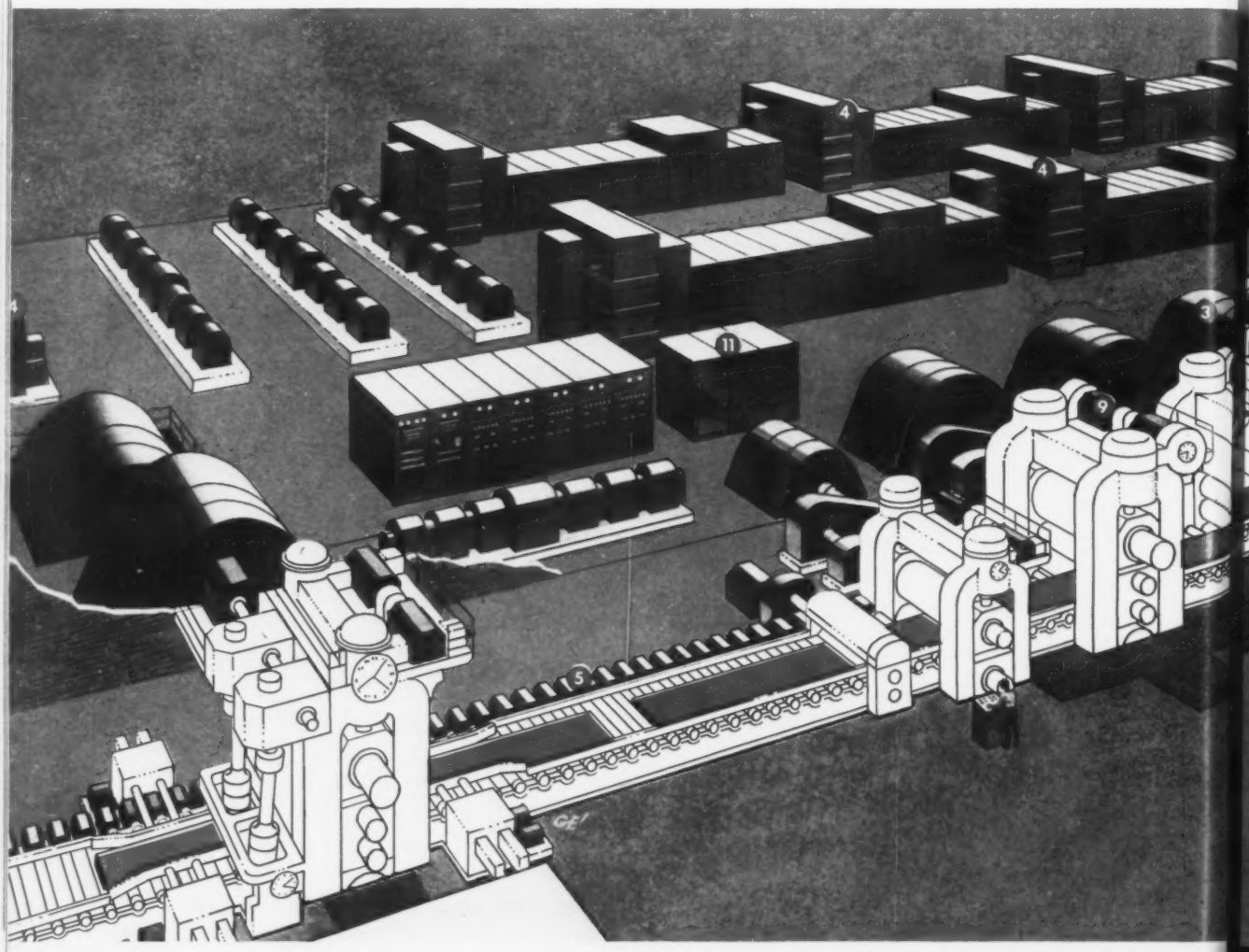
USS and Heroult are registered trademarks

American Bridge Division of United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago Cincinnati • Cleveland Dallas • Denver • Detroit • Elmira • Gary • Harrisburg, Pa. • Houston • Los Angeles • Memphis • Minneapolis • New York • Orange, Texas • Philadelphia Pittsburgh • Portland Ore. • Roanoke • St. Louis • San Francisco • Trenton • United States Steel Export Company, New York

General Electric's new program for Automation through Modernization will help you . . .

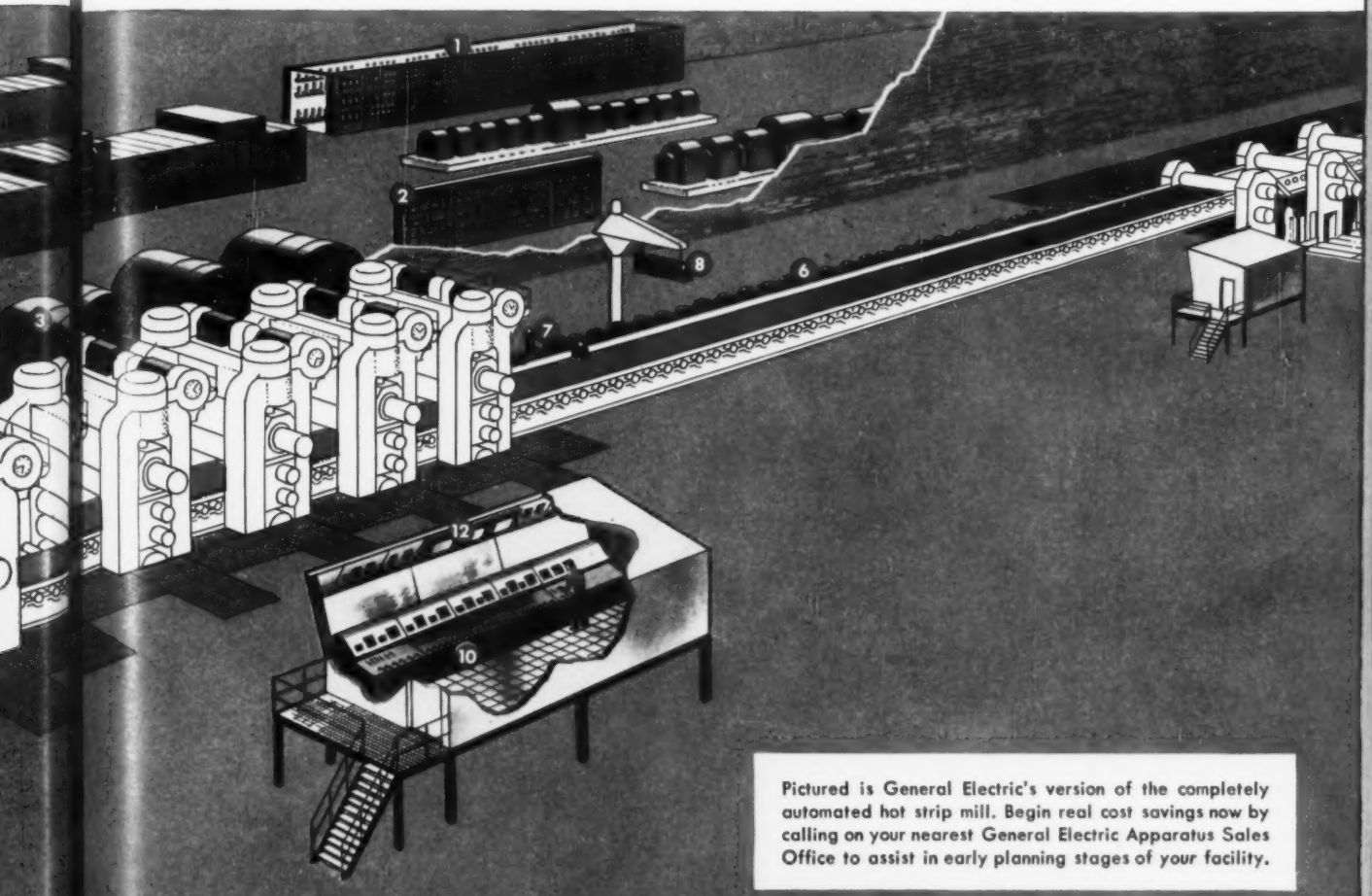
REDUCE SCRAP LOSSES, MODERNIZE FOR PROFITS



GENERAL ELECTRIC CAN AUTOMATE YOUR MILL TODAY

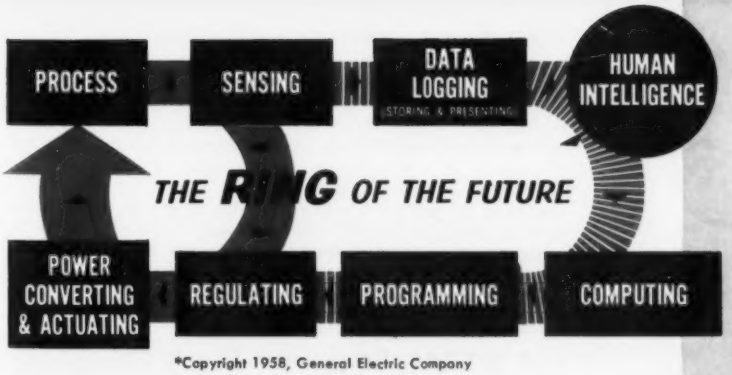
1. **Main mill control,** complete with stand speed regulators, utilizes quick-response *DIRECTO-MATIC* static control to perform complex functions of automation, such as automatic roll positioning.
2. **Automatic gage control** provides accurate gage throughout the entire strip.
3. **Main drive motors** incorporate unique features to cut installation cost, provide more accessibility, low maintenance, increased reliability.
4. **M-G sets or mercury-arc rectifiers,** depending on application requirements and operating conditions, provide reliable d-c power to main drive motors.
5. **MD-600 motors** individually power intermediate delay tables, eliminating reduction and bevel gears, lowering maintenance.
6. **Especially designed MDY d-c motors** for runout-table give long, dependable service under all operating conditions.
7. **New RAYMIKE 600 x-ray thickness gage** provides high accuracy over long periods of time with great reliability.
8. **Width gage** measures strip without contact, provides visual indication to operator through digital readout device and can be used in automatic gage control to avoid variations in strip.
9. **MD-600 motors** provide ruggedness, instant response and low maintenance to the most vital mill operation.
10. **Control console** keeps operator in constant touch with all mill operations.
11. **Data processing equipment** records data, sets up operating guides, ultimately controls the process using the G-E 312 digital control computer.
12. **Closed-circuit TV** gives visual contact with all remote and inaccessible mill functions.

One of the many benefits of automating your hot strip mill will be a significant reduction in scrap losses. Major advances in regulation of stand speeds minimize looping and stretching. Automatic gage control can reduce strip cobbles by as much as 27%, decrease lost rolling time due to cobbles 35%. Step-by-step implementation of General Electric's "Ring of the Future"* will provide you with these and many other benefits of automation through a profitable plan of modernization. For full details on Automation through Modernization, mail the coupon below, today.



Pictured is General Electric's version of the completely automated hot strip mill. Begin real cost savings now by calling on your nearest General Electric Apparatus Sales Office to assist in early planning stages of your facility.

THE "RING OF THE FUTURE" KIT IS GENERAL ELECTRIC'S GUIDE TO AUTOMATION THROUGH MODERNIZATION. ***Write for your kit today.***



*Copyright 1958, General Electric Company

TO: SECTION 804-3
GENERAL ELECTRIC COMPANY
SCHENECTADY 5, NEW YORK

Please send me G.E.'s "Ring of the Future" kit.

Name_____

Position_____ Company_____

Address_____

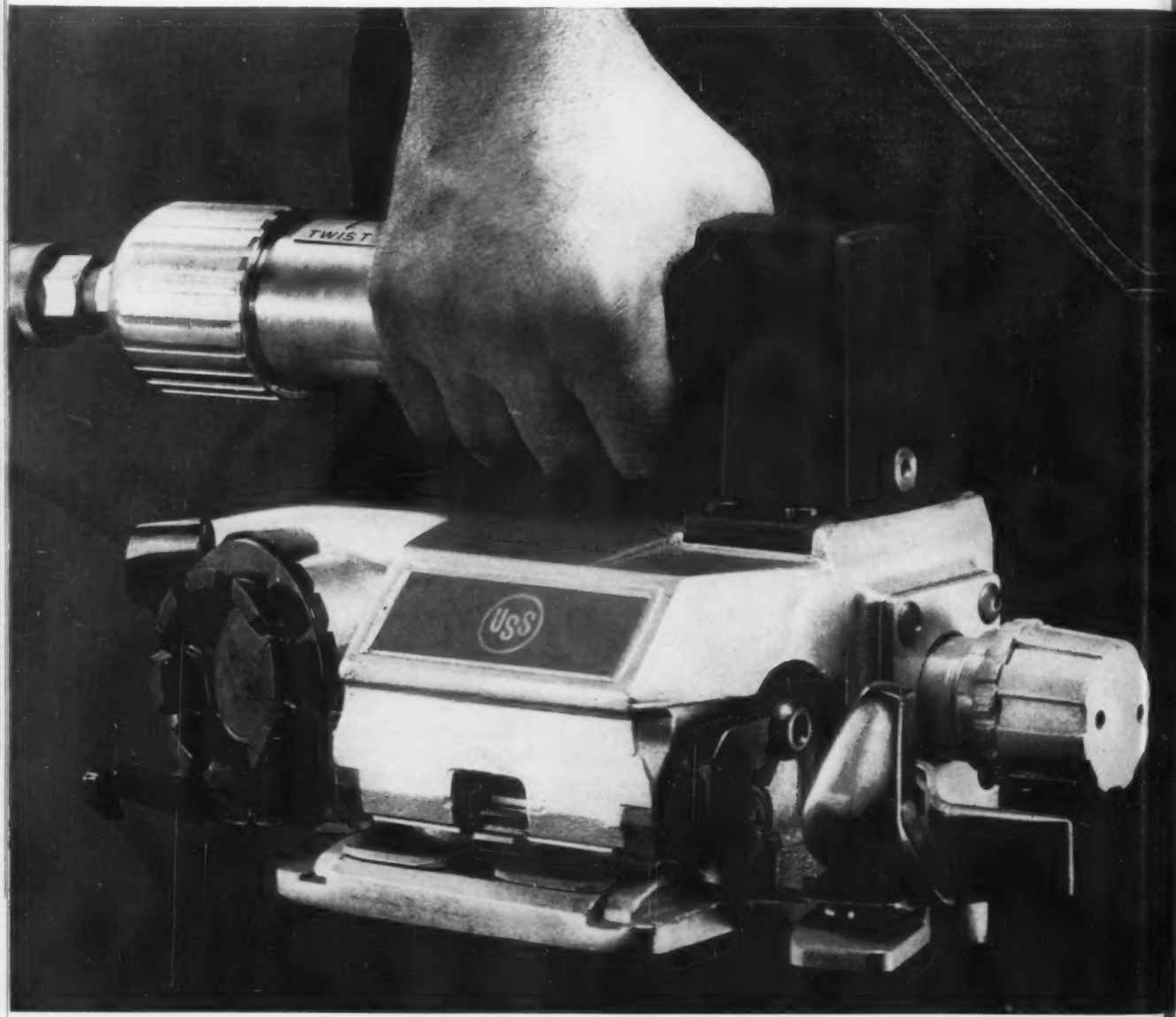
City_____ State_____

Automation Through Modernization

GENERAL ELECTRIC

Another example of USS **COMPLETEST**

NEW! Portable Model 13 uses air p



Lightens your work. USS Steel Strapping Model 13 is brand new—the only one of its type. It is a portable, semi-automatic tying machine that makes packaging and palletizing faster and less fatiguing, helps you tie more bundles or cartons per day. It is designed for any packaging or palletizing operation which can use 12- to 15-gauge round steel strapping. Because Model 13 is portable . . . it weighs only 20 pounds . . . it can be carried quickly to any spot where it is needed. It operates on air power—one twist of the wrist draws the strapping to a predetermined tension, and the reverse twist ties and trims the strap. Equal work load on all straps at all times with built-in adjustable tension control. For production line use, a suspension attachment and balancer keep the machine readily available.

U. S. Steel Supply Division of United States Steel USS

U. S. Steel Strapping formerly Gerrard Strapping

Steel Service Centers and Complete Steel Strapping Service Coast to Coast

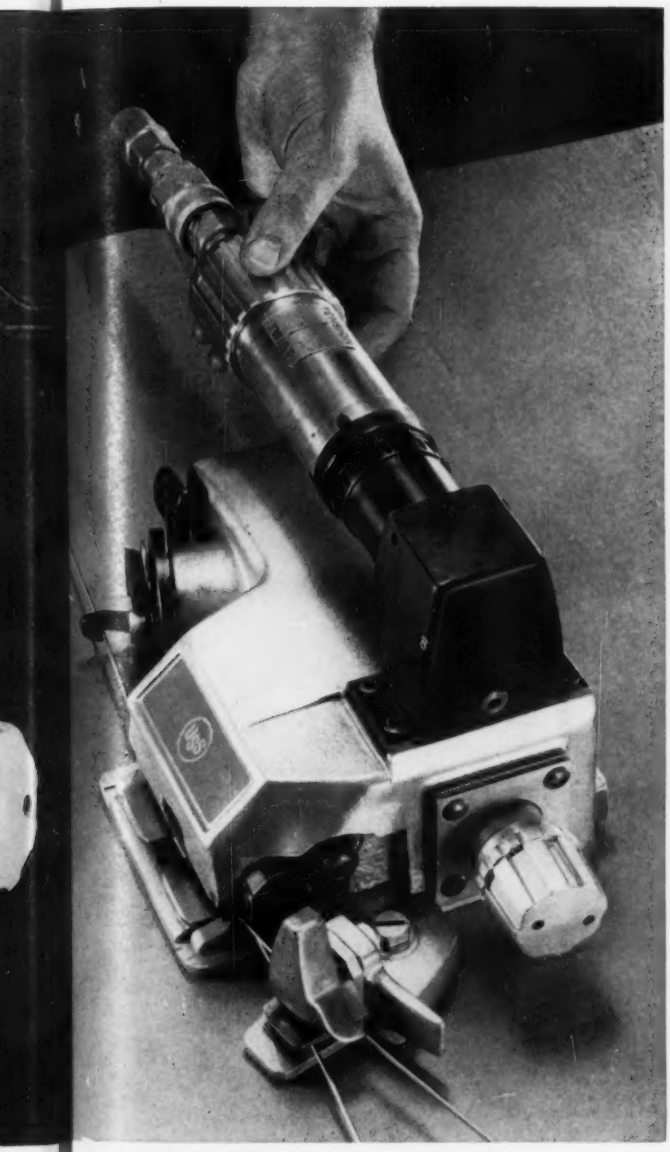
STRAPPING **STRAPPING TOOLS**

Brightens
nate prod
quickly a
even over
ator. And
Strapping,
a substant
Strapping
for the w
strap. Ma
tion in st
after switc

TE

TESTEEL STRAPPING SERVICE

ses air power for faster, easier tying



Brightens your profits. Model 13 can help you eliminate production line delays because it can be operated quickly and easily. It makes up to 10 ties per minute, even over long periods because it does not tire the operator. And because Model 13 uses USS Round Steel Strapping, sizes 12- to 15-gauge, it offers the possibility of a substantial reduction in strapping costs. Round Steel Strapping gives you the highest possible tensile strength for the weight of its steel. It therefore costs less per strap. Many manufacturers have noticed a sizeable reduction in strapping costs, in some cases as high as 50%, after switching to USS Round Steel Strapping.

Widens your potential. Model 13 will help you speed up packaging and palletizing procedures, perhaps even break a bottleneck that is seriously hampering your output. Faster tying means faster shipping and higher production per day. A USS Steel Strapping Specialist will be glad to consult with you about the application of Model 13 to your tying problems. His experience is yours for the asking, and his recommendations will be tailored to your situation. Because we handle both round and flat steel strapping, his suggestions will not be biased in favor of any particular form of strapping—they will be aimed to make your tying operations fast, safe and economical. Please write for a free copy of our Sweet's Catalog insert for further information. U.S. Steel Supply Division, United States Steel Corporation, 208 South LaSalle Street, Chicago 4, Illinois.

USS is a registered trademark

TECHNICAL ASSISTANCE

AIR FREIGHT EXCLUSIVE

Reserved Air Freight—United Air Lines regular-rate "extra" guarantees you space

United Air Lines can *guarantee* the air freight space you need! United Mainliners and Cargoliners take off more than 900 times a day, and every one of them is a cargo carrier. The "right" flight at the right time for your shipment – another reason why so many shippers use Reserved Air Freight on a regular basis! Phone United Air Lines today.

AND MORE "EXTRAS"

Radar on every Mainliner® helps insure more on-time deliveries, a smoother ride for fragile cargo.

The only centralized cargo control checks your shipment every mile and minute of the way.

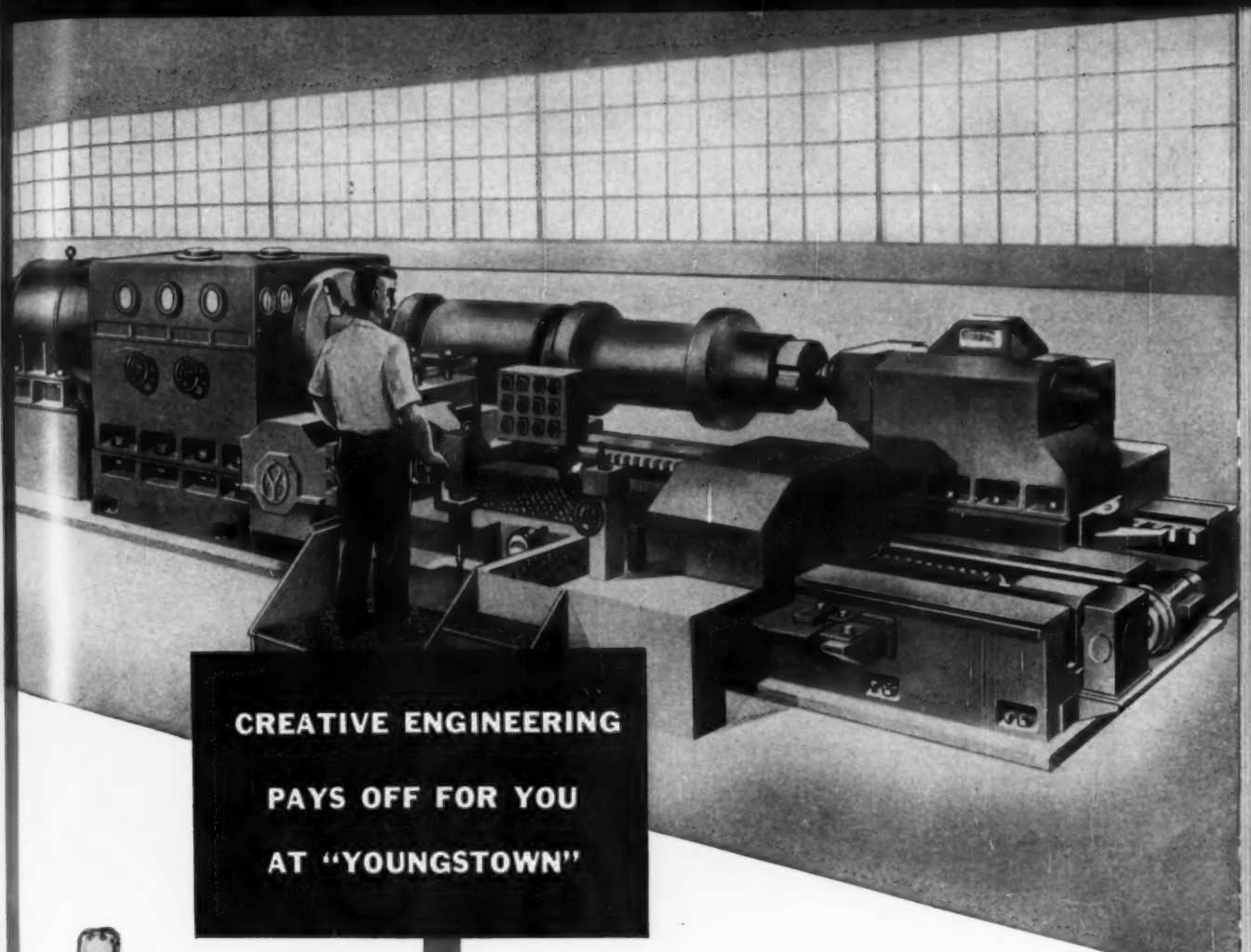
Door-to-door pickup and delivery makes United an extension of your own shipping department.

Service to 82 cities, 2000 communities, puts most markets only hours from your production line.

FREE BOOKLET

Tells how United Air Lines saves freight shippers money, provides better service. How about you? Just write to Cargo Sales Division, United Air Lines, 36 South Wabash Ave., Chicago 3, Illinois.

YOU PAY NO MORE FOR EXTRA CARE WHEN YOU SHIP UNITED AIR LINES



CREATIVE ENGINEERING

PAYS OFF FOR YOU

AT "YOUNGSTOWN"

"YOUNGSTOWN" quality begins with the progressive ideas of our engineering staff (example: our new roll lathe design). Consult us . . . particularly on such completely integrated projects as pickling lines, scrubber lines, slitting lines, shearing lines, extrusion presses and auxiliaries, furnace charging equipment, runout tables . . . Paralloy and ductile iron rolls . . . Custom built equipment . . . all benefiting from our ¾ century of experience.

Automation hits peak in

"YOUNGSTOWN" CONTOUR ROLL LATHES

(Capacities 24"-36"-48"-60"-72")

The above sketch, made during construction, shows the typical design of "YF&M" contour roll lathes.

Automatically controlled, hydraulic or electric tracers which are "templet or numerically controlled" assure smooth operation, fine finish, and extremely close tolerances. Tool post and carriage are designed for use of either carbide-tipped tools or regular roll turning tools. Headstock has illuminated inspection ports . . . automatic lubrication . . . Timken roller bearings . . . herringbone gearing . . . Rugged throughout for extreme rigidity . . . No faceplate overhang. Higher headstock speeds can be furnished to accommodate ceramic tooling.

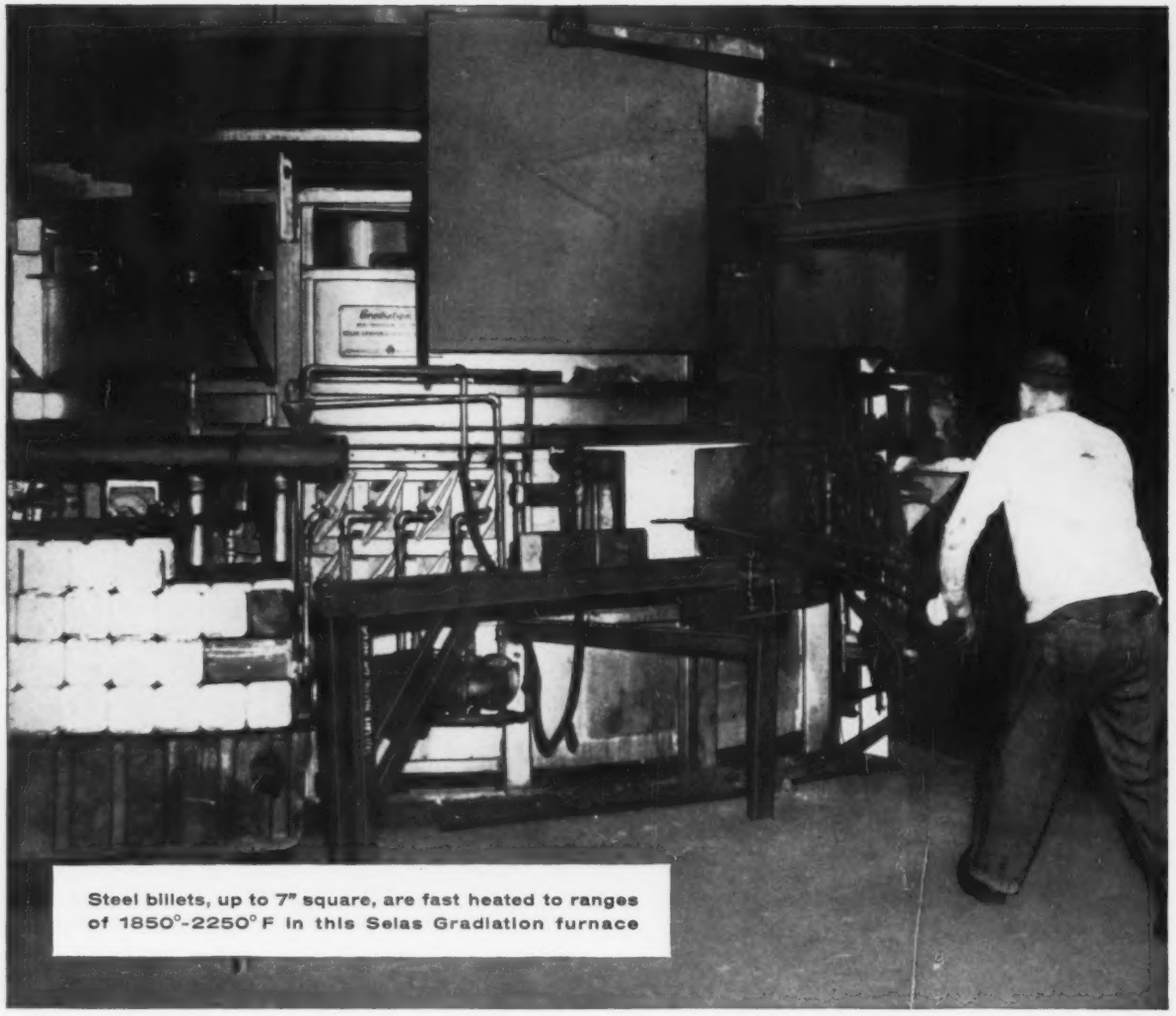
Heavy Duty spring-loaded tailstock with load indicator—avoids overloading of bearings. Housings—manually or hydraulically operated. Electric-Hydraulic Ragging attachment optional. Everything to meet specific requirements.

Write for complete information.

The Youngstown Foundry & Machine Co.

SERVING INDUSTRY SINCE 1885

Youngstown 1, Ohio



Steel billets, up to 7" square, are fast heated to ranges of 1850°-2250° F in this Selas Gradiation furnace

FAST HEATING WITH *GAS*

- improves forgeability
- reduces power requirements
- increases metal flow

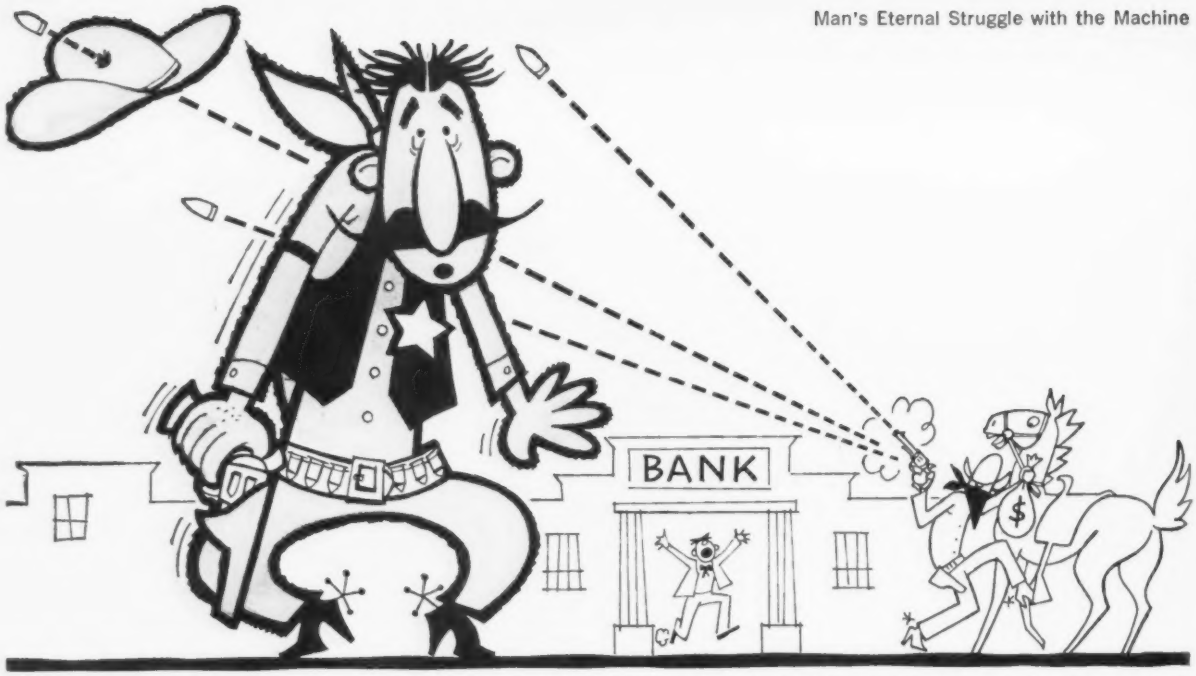
A Gas-fired Gradiation® furnace designed and built by Selas Corporation for Lansdowne Steel and Iron Company, Morton, Pennsylvania heats billets to 1850°-2250° F at rates of 2 to 5 minutes per inch of thickness—thus virtually eliminating scale. Some fast heated billets are forged at temperatures 300° F below conventional methods.

Improved forgeability, directly attributable to fast heating with Gas, reduces power requirements at the usual forging temperatures. Or, for given power applied, permits an increase in the amount of flow or deformation.

For information on how Gas equipment can help you in your production operations, call your Gas Company's industrial specialist. He'll be glad to discuss the economies and outstanding results you get with Gas and modern Gas equipment. *American Gas Association.*

Memo to a
Man of "Parts"
The number of different parts made from Roebling High Carbon Specialties, Flat Wire and Spring Steel are close to countless.
Some things you can count on, though, are the consistent dimensional and mechanical uniformity you get with any Roebling High Carbon Specialty. They are the qualities that contribute to speeding *your* production and cutting *your* costs.
They are high qualities that make for high values. Next time you need flat wire or spring steel, specify Roebling. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.
ROEBLING
Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation
Roebling... Your Product is Better for it

Man's Eternal Struggle with the Machine



COMPETITIVE PRESSURES AND RISING COSTS DEMAND GREATER PRODUCTION EFFICIENCY THAN EVER BEFORE

Have you ever wished you worked in a nice, quiet little shop...?

Sure you have.

The chances are you don't work in one now. There just aren't any nice, quiet little shops anymore. Everybody's out to make a buck. And they all seem to be competitors of yours.

Like everybody else's, your shop is full of complex equipment. Production is rough on the best of it. Eventual breakdown of some sort is almost inevitable. Even though your maintenance people can satisfy most of the problems, what happens when something goes wrong they can't handle?

With your production held up by a breakdown, you can't afford a vendor who passes the buck for service to all the suppliers of his components!

And what about that new equipment you're going to buy? Probably the latest in design. Most likely something your service people don't know anything about at all! Yet, it's got to get into production fast, and stay in as consistently as possible. With your production waiting, you can't afford to test and prove the vendor's machine for him!

Sciaky has always accepted *full responsibility* for its resistance welding and production equipment. Sciaky equipment is designed and built to do the job it was sold to do. That's why it's tested and proved *before shipment.* That's why the Sciaky Service Organization is on call anytime to service Sciaky equipment when necessary.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you're considering equipment. No obligation, of course.

Sciaky Service is a plus-feature that has been wanted by customers all over the world. Why take a chance on service that's sometimes needed on even the best machines. Why, to be sure, when you can enjoy the service facility that has been the difference between expensive production stoppages and minor delays.

SCIAKY

75A

SCIAKY BROS., INC., 4923 W. 67th STREET, CHICAGO 38, ILLINOIS • POrtsmouth 7-5600

One of the 42 studs that hold the Shippingport* reactor's top head to its shell section...

This stud must not fail... that's why it's 4340 Nickel Alloy Steel

Forty-two studs, just like the one shown above, are being used to fasten a nuclear reactor's top head to its shell section.

Each of these studs is made of 4340 nickel-chromium-molybdenum alloy steel for essential strength and toughness. Stud tension required to maintain leakproof contact of head to shell is 40,000 psi.

In nuclear reactors as studs, or in steel mills as heavy-duty gears, or in rotary shears as shafts 4340 Nickel alloy steel proves again and again that it gives the best combination of strength, toughness, ductility, and resistance to fatigue. Performance proves that 4340 gives the properties which are best suited for moderate-to-heavy section parts.

Performance on these jobs also proves that AISI 4340 responds reliably to all forms of heat treatment. In the stud shown above, for example, 4340's ability to be hardened easily throughout large sections was of tremendous value. And its ability to be machined *after* heat treatment was valuable in thread cutting.

The high hardenability of this Nickel alloy steel, its machinability as heat treated up to 340 BHN, can prove valuable to you, too.

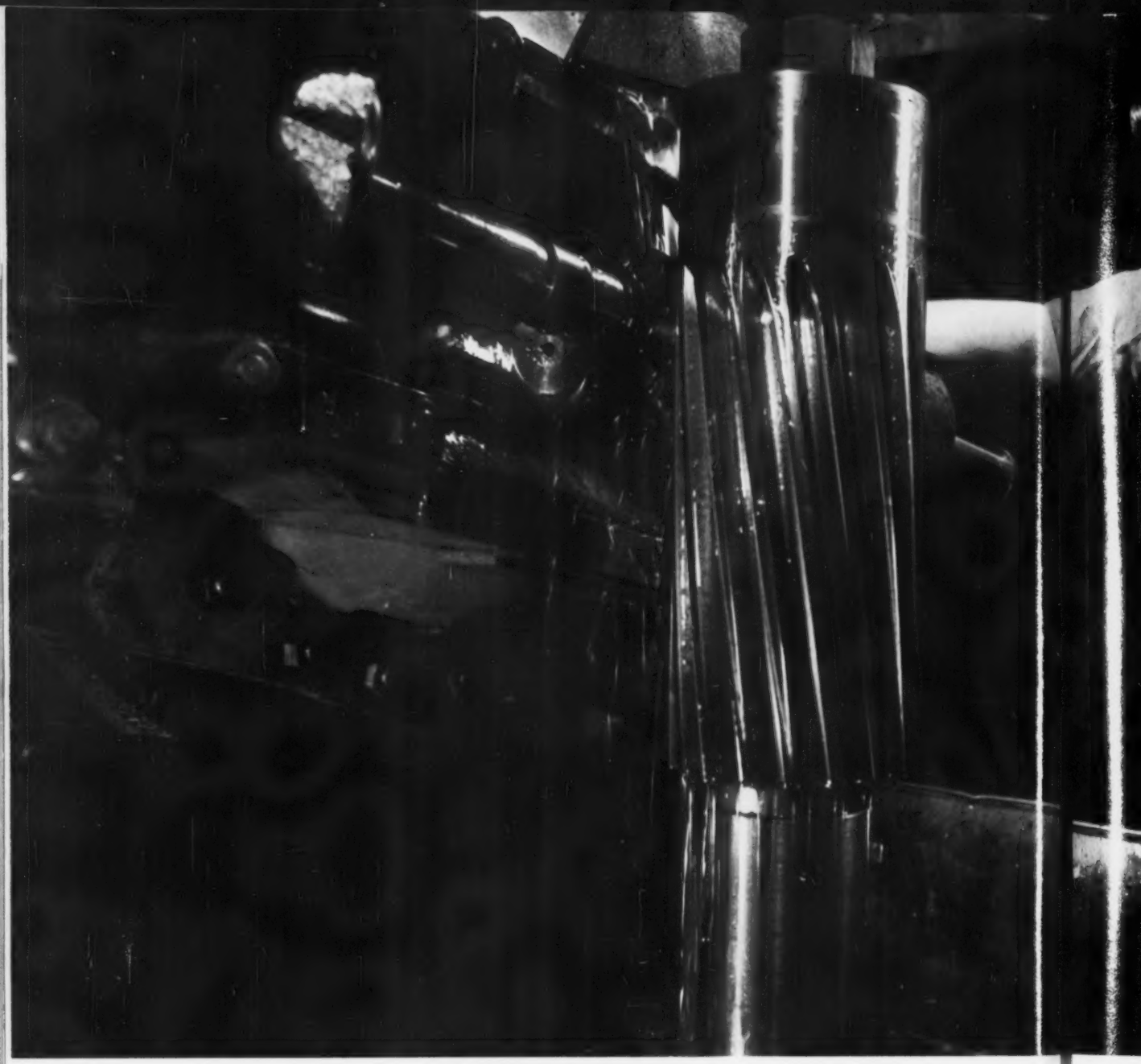
Why not look into the possibilities of 4340 Nickel alloy steel? Most Steel Service Centers throughout the country carry this steel in stock—will make deliveries on a "next door" basis. Write Inco for a list of Steel Service Centers stocking 4340 Nickel alloy steel. A postcard will do it.

*Shippingport Nuclear Power Station. Operated by Duquesne Light Company. Designed by Westinghouse Electric Corporation. Reactor Vessel designed and manufactured by Combustion Engineering, Inc.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N.Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER



Cuts inventory, yet widens range of "custom" machining

GULF MAKES THINGS

How do you maintain "custom" standards of machining, and yet hold down operating costs in the face of a constantly expanding diversity of projects?

That was the problem faced by the Rolling Mill Division of E. W. Bliss Company, Salem, Ohio. This division produces a wide variety of metal processing equipment, from machine tools of bench-top size to multi-million dollar rolling mill installations.

H. G. Gibson, Plant Engineer of the Rolling Mill Division, found the answer in just three of the multi-purpose cutting oils in the Gulfcut line. Gulfcut 21A, Gulfcut 31A and Gulfcut Soluble Oil proved effective over the complete range of tough machining jobs at the plant, and permitted a wholesale reduction in oil inventory.

"Our alternative," reports Mr. Gibson, "would be a stockpile of individual cutting oils and special additives for individual jobs—with a resulting step-up in inventory costs. But these 3 Gulfcut oils meet *all* our machining requirements.

"In high-precision gear hobbing, for example, Gulfcut 21A—a sulfurized-mineral oil—dissipates the extreme heat rapidly and thus checks expansion of both hob and workpiece. Helps us hold tolerances within .001″ in this operation.

"In the boring, facing and turning of large gear rings, Gulfcut Soluble Oil gives us the critical cooling required

Gulf man on the job checks precision-hobbed gears at Rolling Mill Division of E. W. Bliss, where Gulf helps make things run better. Left, Fred Sweitzer, General Superintendent. Right, William A. Stranko, Gulf Sales Representative.

Hobbing helical gears for rolling mill tables, on a 72" gear hobber, at Rolling Mill Division of E. W. Bliss Company. Hob is flooded with Gulfcut 21A, which helps achieve rough hobbing of .625" and finish hobbing of .090" on steel of 280-311 Brinell hardness. Pinion is cut at 7½° helix angle in the illustration at left.

with 3 multi-purpose Gulfcut oils . . .

RUN BETTER!

and permits a feed of 325 sfpm with no loss in tool life.

"In a tough screw-cutting operation, where the piece is 25 feet long, Gulfcut 31A—a sulfurized-mineral-lard oil—helps us achieve the specified 16 micro-inch rms finish on highly polished screws used in steel mill roll changing units.

"In hundreds of other jobs, these 3 multi-purpose Gulfcut oils help us maintain our high machining standards on a low oil inventory."

Your plant can cut machining costs and upgrade production with Gulfcut oils. There's a grade for every need in the complete Gulfcut line. Call your nearest Gulf office or mail coupon for illustrated bulletins.

GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Send me illustrated bulletin on

☐ Gulfcut "regular" oils.
☐ Gulfcut Soluble Oils.

Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____

SP 9604

Photograph courtesy of Joseph T. Ryerson & Son, Inc., Chicago, Illinois.

Every kind of expanded metal—aluminum, stainless, carbon steel, etc.—every type and size—is immediately available from the large stocks at your **Steel Service Center.** Shown below are just a few of the many meshes on hand.

Immediately available from your Steel Service Center . . .

expanded metal in many meshes and sizes

Need a handsome diamond mesh for any one of 1000 uses? Penmetal makes the type and size you need . . . to be used structurally, decoratively, or as an integral part of an appliance or machine.

And, whether you need one piece or a carload, you save time by ordering from your nearby **Steel Service Center.** Their stocks are complete and always up to date. They are set up to process your order quickly, prepare the expanded metal to your specifications and make dependable delivery.

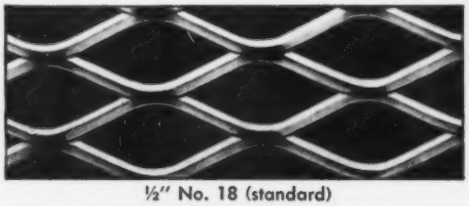
What's more, their staff of specialists gives you a valuable source of help in selecting the most suitable mesh—or in solving problems of fabrication and application.

PENN METAL COMPANY, INC.

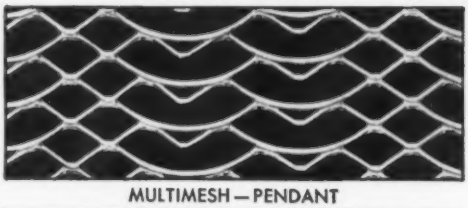
General Sales Office: 40 Central Street, Boston 9, Mass.
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

PM-221

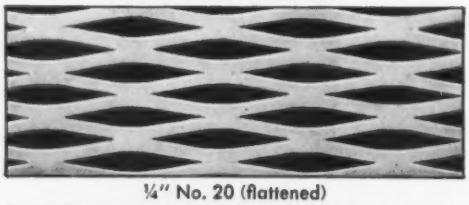
AMERICAN STEEL WAREHOUSE ASS'N.



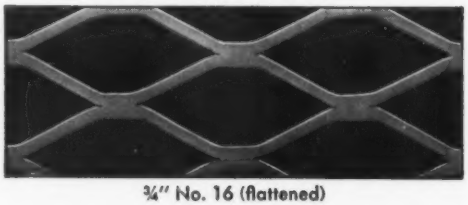
½" No. 18 (standard)



MULTIMESH—PENDANT



¼" No. 20 (flattened)



¾" No. 16 (flattened)

56-inch semi-continuous hot strip mill.

BLAW-KNOX HOT STRIP MILLS

Blaw-Knox designs and builds a full range of continuous, semi-continuous and single stand reversing hot strip mills. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations including all auxiliary equipment for ferrous and non-ferrous metals, iron, alloy iron, and steel rolls, Blaw-Knox Medart cold finishing equipment, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry & Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

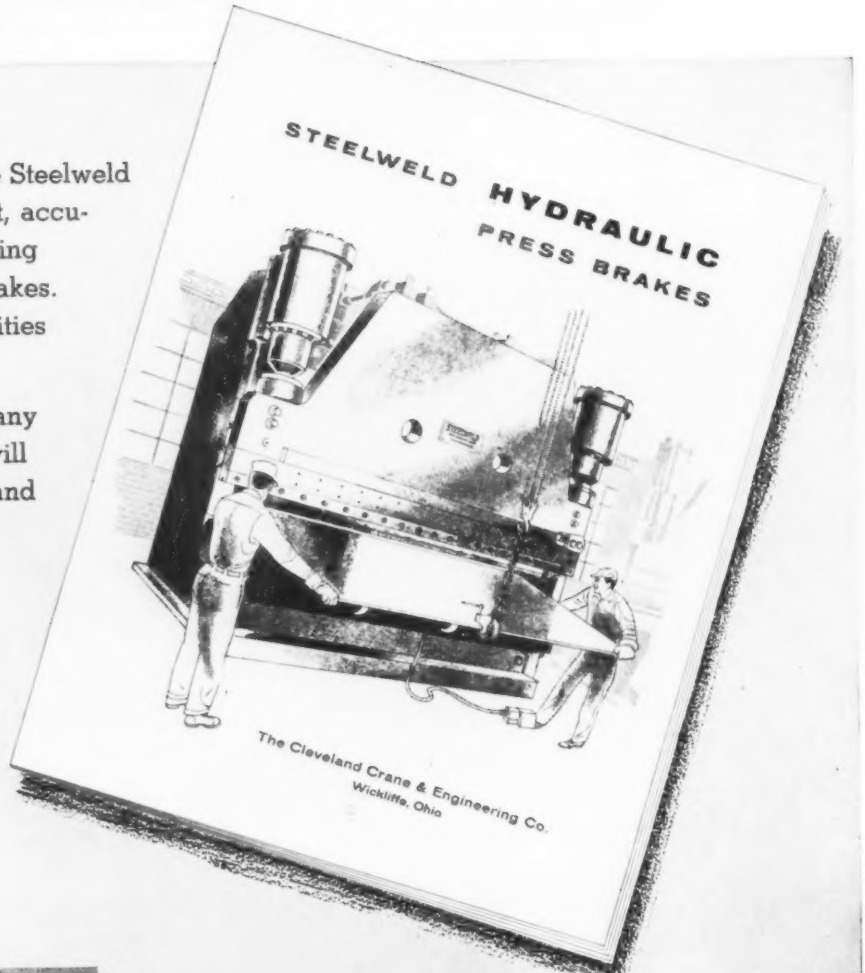
Ask for this

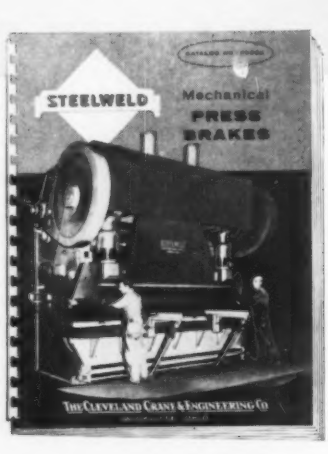
HYDRAULIC PRESS BRAKE CATALOG

Get the facts on the Steelweld Line of quality-built, accurate, smooth-operating Hydraulic Press Brakes. Available in capacities to 2000 tons.

Learn about the many fine features that will speed production and cut your costs.

Write for Free Catalog No. 2024





MECHANICAL PRESS BRAKES

For data on Steelweld Mechanical Press Brakes, ask for this free highly illustrated 52-page catalog—No. 2023.

Write for free copy of catalog No. 2023

STEELWELD
Mechanical and Hydraulic
PRESS BRAKES

Steelweld Machinery includes: Mechanical & Hydraulic Shears and Press Brakes, One-, Two- and Four-Point Straight-Side Presses, Speed-Draw Presses.

THE CLEVELAND CRANE & ENGINEERING CO. • 4876 EAST 281st STREET • WICKLIFFE, OHIO

Greater Corrosion Resistance

Longer Fatigue Life

Less Product Incrustation

new tests prove

CONTOUR-WELDED* STAINLESS TUBING

provides all three!

A recent series of tests prove TRENTWELD® tubing, made by the exclusive *Contour-Weld* process, is smoother than any other full-finished tubing. And still other tests show this extra smoothness ensures longer fatigue life, greater resistance to corrosion and less product incrustation.

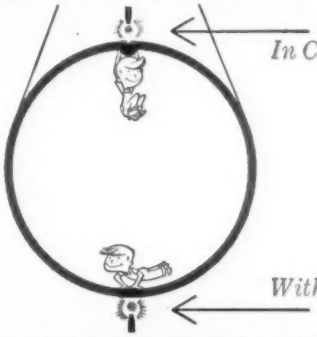
But here's why *Contour-welded* tubing is smoother inside:

First, it's smoother than seamless because it's formed from uniformly rolled strip steel whereas seamless must be extruded.

And second, it's smoother than other welded tubing because the Trent-patented *Contour-Weld* process virtually eliminates the weld bead.

But why not get full details on *Contour welded* tubing's superiority? Send for the free 48-page "Trent Weld Manual." It's chock-full of details on *Contour-welded* tubing in sizes from ⅛" to 40" — in stainless and high alloy steels, titanium, zirconium, zircaloy and Hastelloy†. Write: Trent Tube Company, Box 2518, Pittsburgh, Pa.

†Trademark Haynes Stellite Co.



In **CONVENTIONAL WELDING** of tubes, gravity pulls molten metal down to form a bead that is difficult to remove by cold working. And cold working may lead to undercuts, focal points for fatigue cracks and corrosive attacks. Cleaning becomes difficult.

*With **CONTOUR WELDING** the tube is welded at the bottom. Gravity still pulls the molten metal down inside the tube, but now the weld area corresponds to the contour of the tube. There's virtually no weld bulge on the inside surface. And even on the O.D., the weld seam more closely conforms to the contour of the tubing.

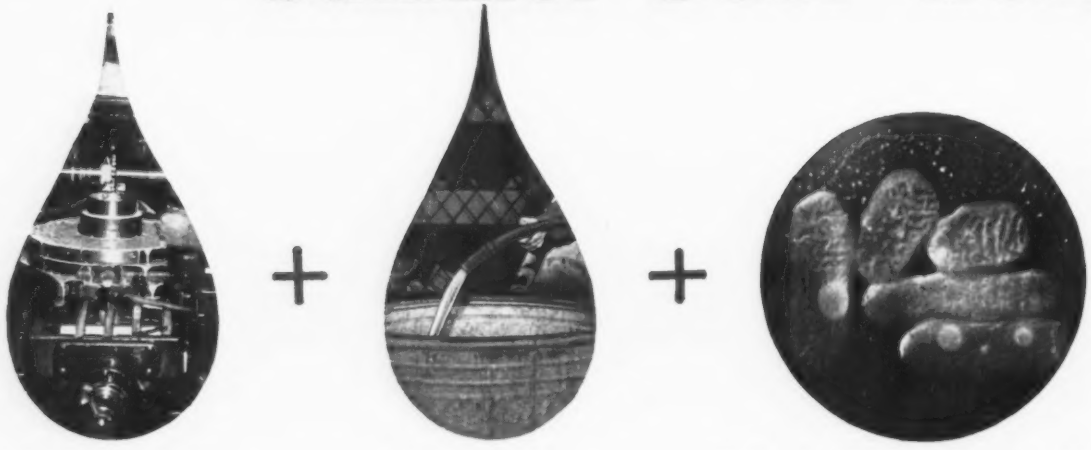
CONTOUR TRENTWELD

stainless and high alloy pipe and tubing

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America • GENERAL OFFICES: East Troy, Wisc. • MILLS: East Troy, Wisc.; Fullerton, Calif.

"Summer Odor" from ra



SOLUBLE OIL + WATER + PSEUDOMONADS + SU

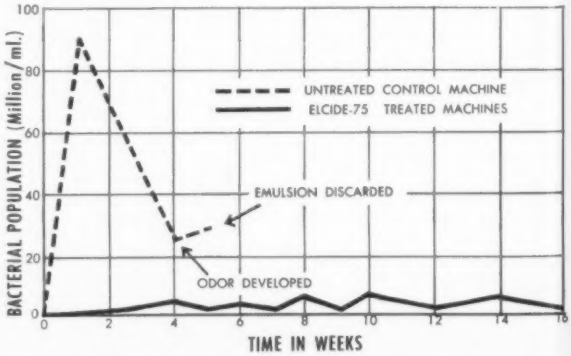
...can be controlled wi

Nearly everyone has experienced the "rotten egg" smell of spoiled soluble oil emulsions. Here's an explanation of what happens to cause it... and how you can control it with Elcide 75.

THE CAUSE: The oil-and-water mixture of a standard duty soluble oil emulsion produces ideal feeding conditions for certain bacteria. One of the most common types, *pseudomonads*, can be found in all emulsions. Once established, they multiply rapidly . . . especially in warm weather . . . and feed on the emulsion.

As these pseudomonad colonies build up, they set the stage for a secondary contamination by sulfate-reducing bacteria. These bacteria feed on the petroleum sulfonates commonly used as the emulsifying agent in soluble oils. As they multiply, they throw off H_2S, the hydrogen sulfide gas known in metalworking plants as "summer odor."

Unfortunately, the damage from bacterial contamination does not end here. As the odor develops, the bacteria continue feeding on the emulsifier until the emulsion breaks. This process changes the mixture from alkaline in composition to corrosive acid. Other by-products from the bacteria form a slime that clogs screens and filters, and presents certain hygienic hazards.



This record of an actual in-plant test shows how untreated emulsion allows rapid bacterial build-up. The downward curve of the untreated emulsion is where secondary contamination by the sulfate-reducing bacteria starts its final destruction. Note the comparison between this and the Elcide 75-treated emulsion which lasted 5½ times longer.

ELI Lilly AND COMPANY • AGRICULTURAL AND INDUSTRIAL PRODUC DIVISION

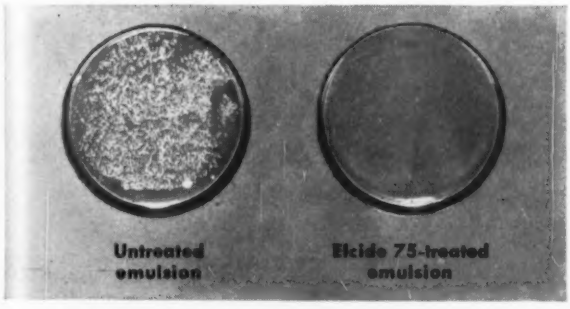
rancid emulsions

+ → $H_2S\uparrow$

SULFATE-REDUCING BACTERIA

(SUMMER ODOR)

d with ELCIDE 75



THE CURE: **ELCIDE 75 hits this problem at the very first stage** of bacterial growth. The petri dishes above show the contrast between an untreated emulsion and an emulsion treated with Elcide 75. The light areas in the untreated sample are bacterial colonies. Because Elcide 75 is a new, wide-spectrum bacterial inhibitor, it attacks and controls not only the more common bacteria, but also mutants which frequently develop. Just one ounce of Elcide 75 to each 4 gallons of fresh emulsion breaks the vicious cycle of bacterial growth before it starts . . . thereby greatly extending the useful life of your coolant.

ELCIDE 75 is a reliable way to prevent the waste of frequent emulsion changes. Its wide range of antibacterial action insures a constant control that not only prevents summer odor, but also reduces production costs. Many plants have thoroughly tested Elcide 75 in comparison to untreated emulsions. Their findings indicate Elcide 75-treated emulsions last far longer, reduce downtime and oil concentrate costs, and increase total productivity.

If you have not yet tried Elcide 75 in your plant, we urge you to try it now . . . before the heat of summer further inflates your personnel problems and operating expenses.

PRODUCT SPECIFICATIONS—ELCIDE 75

(Lilly's brand of bacterial inhibitor for cutting fluids)

Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium *o*-phenylphenate.

Package	Price per Gal.
1-gal. (4 per case) polyethylene	$8.50
5-gallon polyethylene	$8.00
55-gallon stainless steel	$6.50

Sold only through selected distributors.

For more information or to place your order, write or phone:

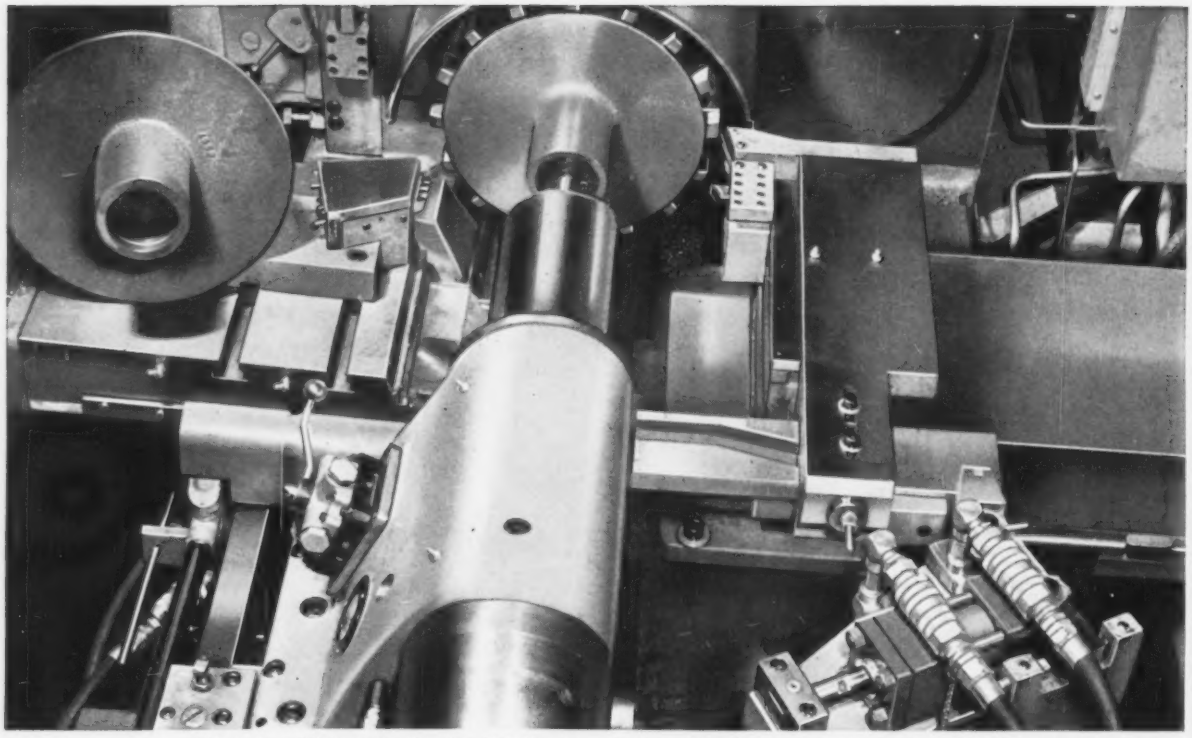
ELCIDE 75™

PATENT PENDING

KEEPS COOLANTS FRESH AS A DAISY!

DIVISION

INDIANAPOLIS 6, INDIANA
Telephone: MElrose 6-2211



Note how 16-jaw chuck grips 10"-diameter, inner pulley disc on narrow portion of O.D. This permits machining entire flange face. Accurate taper is generated by cam-operated sliding toolholder shown at right.

No. 12 replaces two manual lathes, cuts time 53%

Automatic cycle, fast setup cut job-lot costs...free operator for other work.

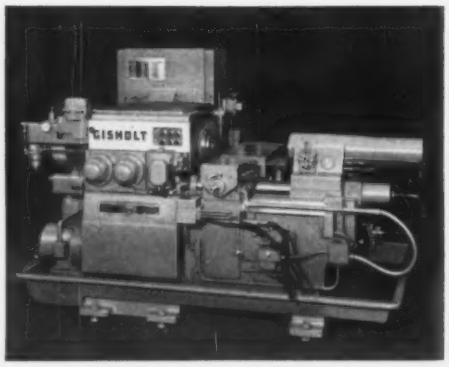
This fast, versatile setup may give you some new ideas on paring job-lot costs. Lewellen Manufacturing Company, Columbus, Indiana, uses it for machining three types of cast iron pulley discs in 15 sizes—in lots ranging from 50 to 100 pieces.

Previously this work required two manually operated lathes. Now one operator does the entire job 53% faster on one Gisholt No. 12 MASTERLINE Automatic Chucking Lathe.

Here's how a typical inner pulley disc, 10" in diameter, is handled: To permit machining beyond the tapered face, the work is held on a narrow portion of the previously turned O.D. in a 16-jaw chuck. A chuck-mounted mandrel with tailstock support provides rigidity for higher speeds and feeds.

Front carriage tools turn the hub O.D. within .0005" and form the base radius. The flange is taper-faced from a cam-controlled sliding toolholder on the rear independent slide. A second tool faces the hub end. Time, just 2.2 minutes, f.t.f.

Change-over for different sizes averages less than 30 minutes. One 30° adjustable cam handles all tapers. Quick-disconnect fittings are easily reversed for tool relief when changing from inner to outer discs.



Gisholt MASTERLINE No. 12 Automatic Chucking Lathe

FOR COMPLETE INFORMATION

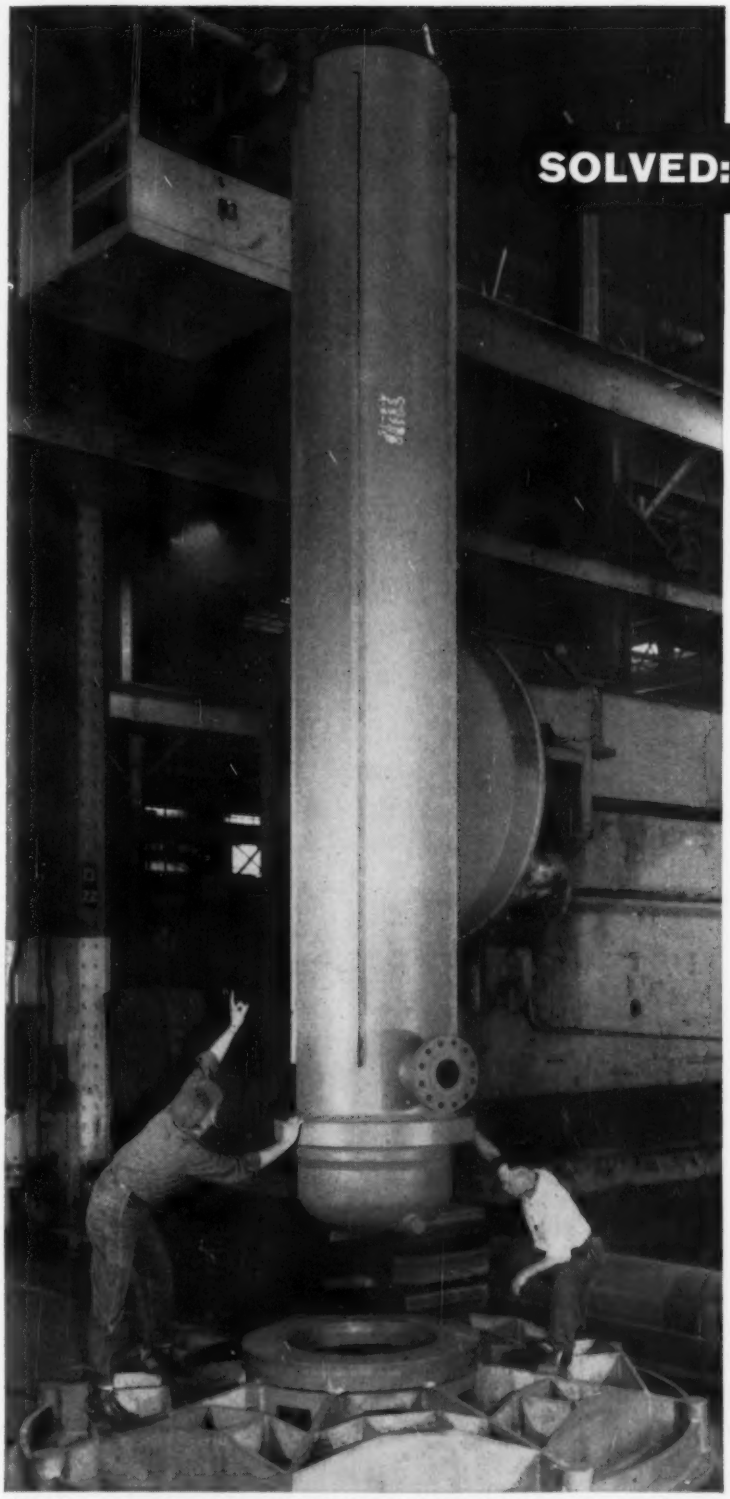
on how the No. 12 can cut your costs on job-lots and production runs, contact your Gisholt Representative—or write for new catalog, Form 1213.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

Turret Lathes • Automatic Lathes • Balancers • Superfinishers • Threading Lathes • *Factory-Rebuilt Machines with New-Machine Guarantee.*

Investigate Gisholt's Extended Payment and Leasing Plans



Blaw-Knox workmen assembling one of two constant pressure type accumulators built for two of America's largest steel mills. Sandusky supplied the straight cylindrical sections for both.

SOLVED: by Sandusky Centrifugal Casting

Blaw-Knox chooses 10-ton SANDUSKY CASTING for giant slabbing mill

When an 18½-foot cylinder was needed for a new giant Universal slabbing mill built by Blaw-Knox Company's East Chicago (Indiana) Works for a well known steel mill, they found that the most practical and economical way to meet all requirements was with a Sandusky Centrifugal Casting.

This 10-ton carbon steel cylinder, 32" O.D. with a 3½" wall, functions as an accumulator in the mill's hydraulic roll balancing system. Essentially a pressure vessel, it simultaneously supports the ram and ballast weighing 226 tons—the weight required to develop constant operating pressure of 1000 p.s.i.

"Only a dimensionally stable, one-piece cylinder could perform satisfactorily in this service," a Blaw-Knox official asserted. *"Distortion could lead to binding, loss of pressure and costly downtime. Sandusky's ability to produce this heavy walled cylinder in one 18½ foot length met all our requirements of cost, stability, and strength."*

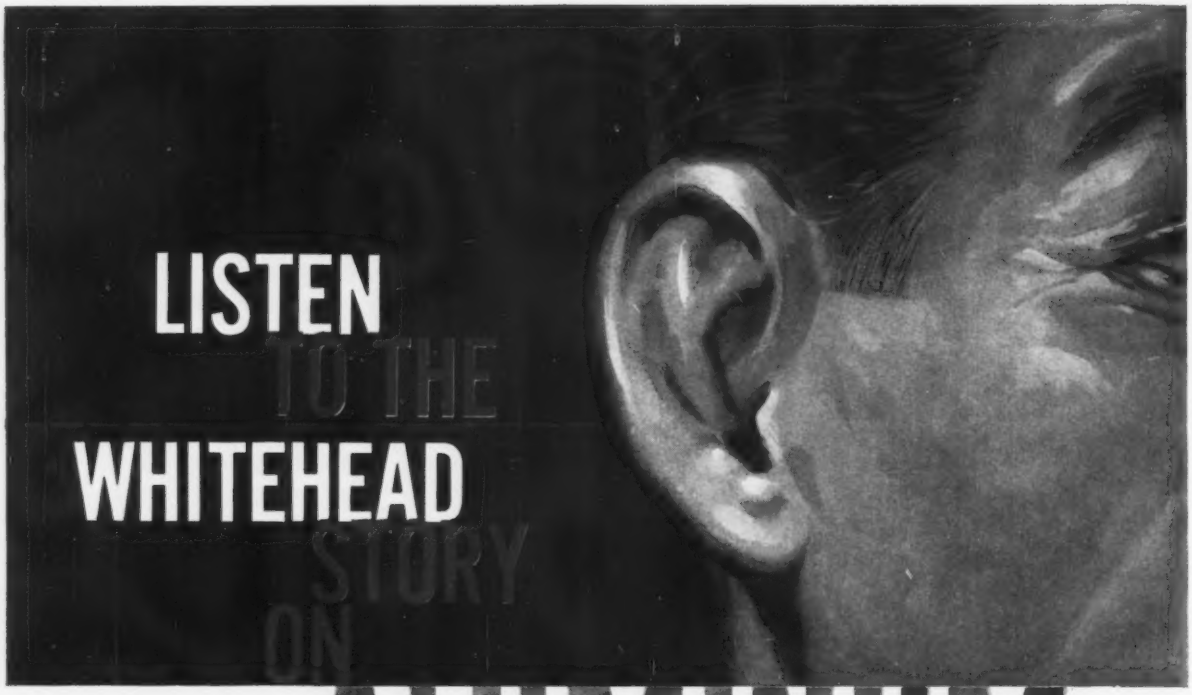
Sandusky cylinders up to 33 feet long —from 7" to 54" O.D.— and in a wide range of ferrous and non-ferrous alloys —may well be the answer to *your cylindrical problems,* too.

Write to us at Sandusky, Ohio. Ask for latest Bulletin #200.

SANDUSKY CENTRIFUGAL CASTINGS
FOUNDRY & MACHINE CO.

8901

SANDUSKY, OHIO—Stainless, Carbon, Low-Alloy Steels—Full Range Copper-Base, Nickel-Base Alloys



ALUMINUM

Full and complete stocks—
Technical help to meet your needs

The Whitehead service story on Aluminum is unusual. It accommodates the engineer who requires technical help in the planning stage. Then, too, the manufacturer or fabricator who requires the supplementary items—welding rod and fasteners to go with sheet; fittings and valves for the pipeline; etc. Truly a one-stop service from Alcoa's largest distributor in metals and technical help in the East.

Stocks of over 700 sizes of rod, pipe and tube; almost 500 items of sheet; thousands of fasteners and even 18 sizes of a specialty item like tool and jig plate, make Whitehead a true "Supermarket" of aluminum, no matter what your requirements.

Since we stock all the principal corrosion resistant materials—Copper Alloys, Brass, Bronze, Clad Metals, Stainless Steel, Monel, Inconel and Plastics, too—we can and do give unbiased opinions on the right material to do the job. Anytime you need anything in the corrosion resistant line, you'll find it pays to call Whitehead first.

Call Whitehead First!

WHITEHEAD METALS, INC.

303 WEST 10th STREET, NEW YORK 14, N. Y.

Other offices and warehouses: **PHILADELPHIA • BUFFALO • HARRISON, N. J. • CAMBRIDGE, MASS. • SYRACUSE • BALTIMORE • ROCHESTER • WINDSOR, CONN.**

WILL STEEL PRICES RISE? How to settle the steel strike without a steel price increase is a problem of major concern. A close look at the issues involved in the walkout leads to the basic issue of costs. And costs determine prices.

NO ONE WANTS HIGHER PRICES. Government, industry, and labor agree that a steel price boost is undesirable. But how to come up with a compromise that would satisfy everybody and avoid higher prices is a matter that even a Solomon would hesitate to tackle.

TAXES ARE INVOLVED, TOO. Secretary of Treasury Anderson sees a possibility that a long strike would put the fiscal 1960 budget in the red. He says the tax losses could run as high as $45 million a week.

ONE SIDE EFFECT OF THE STRIKE: A Midwest die builder reports customers are doubling up on orders--ordering two or three dies where they normally order one at a time. At this rate, he says, his six-month inventory of steel will be gone in three.

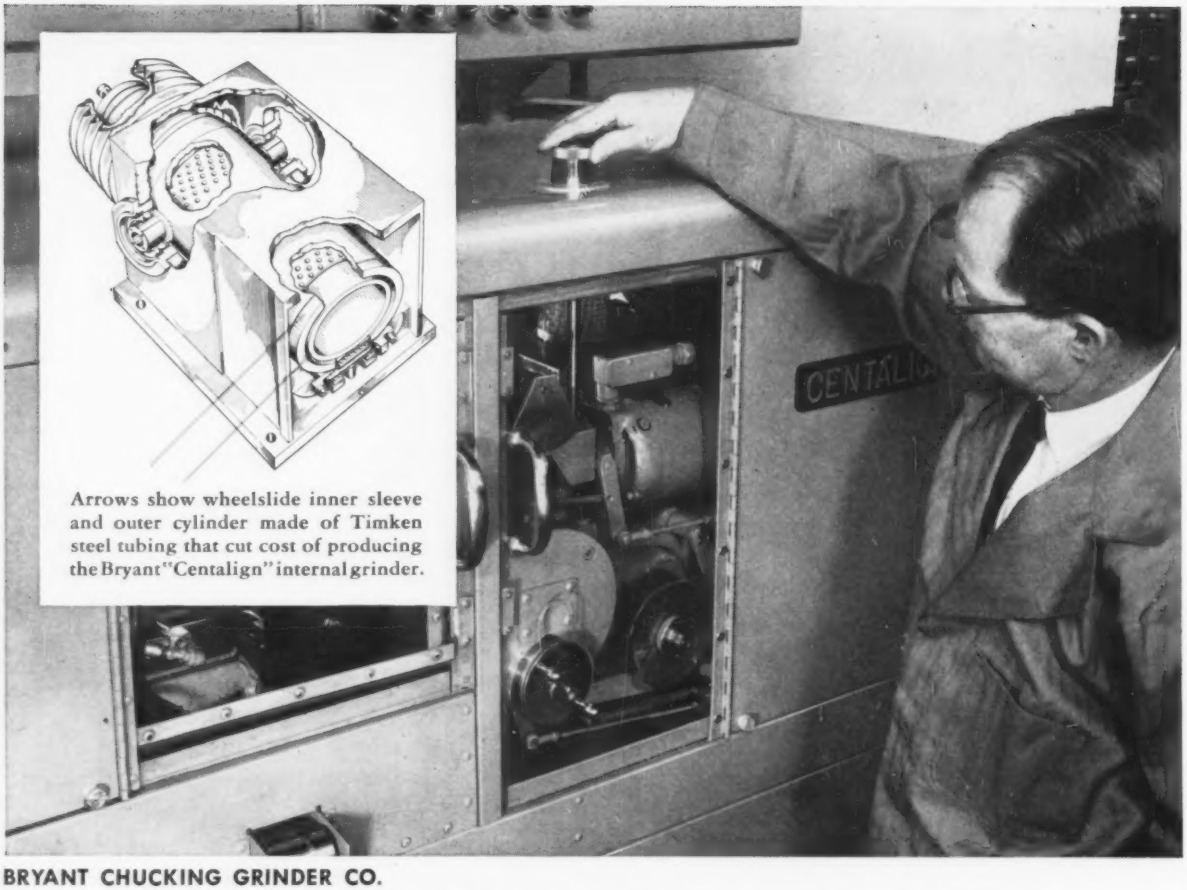
RAILROADS WILL BE USING more aluminum freight cars. Aluminum companies have developed methods to make and repair aluminum rolling stock with the same equipment as steel cars. Higher cost is offset by bigger payload, say aluminum companies.

OFFICE EQUIPMENT MAKERS are out to crack the last big manual job in the office--filing. They claim new mechanical filing machines can boost office productivity as much as 30 pct.

RUSSIA STILL HOPES to build up trade with the U. S. It's counting on the U. S. exhibit in Moscow and the Russian show in New York to produce results by the end of this year. Trouble is the Reds want to buy--on credit--far more than we can possibly buy from them.

MACHINE TOOL DISTRIBUTORS are boosting sales through occasional local "shows." A recent show by Harrington-Wilson-Daum at its Mt. Vernon, N. Y., headquarters attracted over 1000 visitors. H-W-D says the showcase technique is paying off in sales.

VINYL COATED METALS are making headway with the auto makers. Prospects are good they will be used in greater amounts by the auto industry in another year or so. Ford is using vinyl laminated metal for some 14 interior parts in its 1959 Thunderbirds. Auto stylists are taken with its strength and economy.



Arrows show wheelslide inner sleeve and outer cylinder made of Timken steel tubing that cut cost of producing the Bryant "Centalign" internal grinder.

BRYANT CHUCKING GRINDER CO.

Saves 45% with switch to TIMKEN® steel tubing

ENGINEERS at Bryant Chucking Grinder Co. wanted to reduce the cost of producing this "Centalign" internal grinder. They blamed high costs on spoilage due to weld checking and excessive machining time of the inner sleeve and outer cylinder of the wheelslide. When they consulted Timken Company metallurgists, these experts studied all angles of the problem. And they recommended a change to a certain grade and size of Timken® seamless steel tubing. Here's what happened.

Because the tubing was perfectly suited to welding, checking was ended. And costly machining time was cut because excessive stock removal was eliminated. The tubing was the right size for the job. They cut production costs 45%! What's more, the tubing had the desired hardness and grinding properties, responded uniformly to heat treatment.

Timken seamless steel tubing gives better quality finished products because of the way we make it. We forge a solid round over a mandrel, thoroughly working the metal inside and out. This rotary piercing operation gives the tubing its fine forged quality and uniform spiral grain flow for extra strength. Careful control keeps this quality uniform from tube to tube, heat to heat, bar to bar.

To help cut costs on your hollow parts jobs, let our engineers recommend the tube size most economical for you. It's guaranteed to clean up to your finished dimensions. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO". Makers of tapered roller bearings, fine alloy steels and removable rock bits.

Timken alloy steel and seamless tubing is available from warehouse stock in 44 cities in the United States. Call your local Timken Company sales office for the name of your nearest Timken steel distributor.

TIMKEN® *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

Steel Prices Hang in Balance As Strike Continues

How to settle the steel strike without a price boost is the big problem.

There are other issues, but they all lead to the basic one of costs. And costs determine prices.—By J. B. Delaney.

▪ Can the steel strike be settled without a steel price increase?

When you get right down to it, that's what the strike is all about. In major part, at least. No one wants to see another price rise. But that's where agreement ends and argument begins.

Differences of Opinion — The United Steelworkers contend the companies can afford a 15¢ an hour wage and fringe package without raising prices.

The companies argue they can't absorb — even modestly — higher employment costs without freedom to eliminate so-called "featherbedding" in the plants.

Despite these divergent views, the Government is calling for a settlement without a price rise.

Basic Issue Is Costs—There are other issues, of course, and they're all important: Management rights, union power, steel earnings, worker productivity, foreign competition, the workers' share of the profit pie.

But when you examine each one in detail, they all lead to the basic issue of costs. And costs are the determining factor in prices.

That's why this strike will be such a hard one to settle. And whether it can be settled without a steel price boost remains to be seen.

Something to Think About—At any rate, if you are trying to figure whether your steel costs will rise as part of the price of the inevitable strike settlement, here are some things to consider:

If the companies are to avoid employment cost increases, they would have to stop the union cold, something they have not been able to accomplish despite five previous strikes since the war.

Either that, or the companies would have to abandon the principle that to protect their profit position higher wages must be offset by higher prices unless compensating economies are made possible.

For last-minute strike developments, please see page 158.

Can Government Help—Can the Government come up with a solution that will somehow make everybody happy but still avoid a price increase? There's no doubt that it will try very hard. But it's a ticklish problem fraught with many a polit-

Facts in Steel Strike

When It Started: At midnight Tuesday, July 14. It involves some 500,000 workers in basic steel plants, iron ore mines, and other operations.

What's at Stake: The Union demands wage and fringe concessions worth about 15¢ an hour. It also wants continuance of the cost-of-living escalator clause which in three years put 17¢ an hour in workers' pay envelopes.

The steel companies take this position: Extend the old contract for one year at present wage rates and eliminate the cost-of-living clause, freezing the 17¢ into base pay rates. They have also offered to consider some fringe concessions this year and a "modest" pay rise in 1960 in a two-year pact, providing the union agrees to changes in local working rules to permit money-saving plant efficiencies. The companies imply that under either condition, prices will not rise.

What It's Costing: Assuming a steel operating rate of 70 pct had there been no strike, the walkout is costing about 1.5 million ingot tons of steel each week. This takes into account the fact that companies representing about 15 pct of capacity continue to operate (see page 100). In dollars, the loss to the companies is about $200 million a week, to the workers about $50 million.

Where Steel Users Stand: As the strike started, user stocks stood at 23-24 million tons, or better than 100 days' of supply—if stocks were in balance. This inventory is being used up at the rate of 1.5 million tons each week.

1959's Union-Management Crisis

ical pitfall. And the 1960 presidential campaign must be ever kept in mind.

During the three years of the old contract, steel companies increased base prices a total of $19 per ton, on the average. This included boosts of $8.50 in 1956; $6 in 1957, and $4.50 in 1958.

Employment Costs Up—On the other hand, total employment costs of the mills, according to American Iron and Steel Institute, rose nearly 80¢ an hour during this same period. By years, the increases were 23.2¢ in 1956; 26.2¢ in 1957, and 29.7¢ in 1958. These costs include base pay, shift differentials, Sunday premiums, overtime, holidays, vacations, pensions, insurance, supplementary unemployment benefits, and social security.

The union will make much of the companies' second quarter and first half earnings reports to justify its position that they can "afford" to raise wage costs without raising prices. And reports already issued are so favorable that the union's position will sound mighty convincing.

Earnings Are Up—For example: Jones & Laughlin reports record earnings of $42.2 million for the first half; Inland Steel, a record of $42.2 million; Allegheny Ludlum, a record of $12.4 million. Other mills will likely show record or near-record earnings for the period.

But the steel companies have an answer ready: The period was abnormal in that much of their sales represented "scare buying" by steel users hedging against the strike that is now underway. The earnings also were due, the mills say, to heavy investment in new processes and equipment necessary to compete effectively against one another and producers of competing metals and materials.

Enter Mr. Mitchell—Meanwhile, Secretary of Labor James P. Mitchell has come into the picture as a one-man fact finder. As such he has enlisted the help of many government agencies. They will collect and analyze information on wages, prices, productivity, unemployment, industrial relations practices and many other facets of industry operations that might have a bearing on the dispute. After all this information is gathered, a report will be prepared for the President.

"It will enable the President to have all the facts," says Mr. Mitchell.

Why Mills and Union Worry—It's what will be done with the facts that has industry and labor leaders worried. Depending on whether the facts are made public, and the manner of their presentation to the public, one side or the other in the dispute could be made to look like a villain.

But President Eisenhower can be expected to lean over backward to avoid the appearance of favoritism. He has said repeatedly that he would like the steel companies and the union to settle their problems through direct negotiation. Perhaps he will use the report, when he receives it, as a means of "talking turkey" with both disputants.

Facts Are Important—The importance of "facts" in the steel dispute and other battles between labor and management may have been a factor in a new bid by the Labor Dept. for more money to collect industrial statistics. The President has asked Congress for $1.05 million for sharply expanded research in

Will Foreign Steel Help?

With American mills strikebound, steel users are showing more interest in foreign supplies. IRON AGE checked its district editors to find out how much imported steel was available and the prices asked.

Here's a summary of what they discovered:

Supplies: Foreign steel stocks in this country are fairly large. They are greater in some regions than in others. Chicago is described as "loaded" with imported steel. More overseas mills are now shipping into the Great Lakes area. Houston sources say 146,000 tons of imported steel arrived there in May and June. During the whole first half of '58 only 100,000 tons came in.

"We have reports of stepped-up foreign activity from both the East and West coasts, the Gulf area and the Great Lakes region," says the sales manager for an American mill.

New Orders: Some foreign mills are still accepting third quarter orders for sheets, plates, and structurals. U. S. oil producers have placed many third quarter pipe orders for overseas drilling operations with foreign mills. Other foreign suppliers are quoting delivery in October and November.

Prices: As yet there's little evidence that European mills have increased prices to U. S. customers. But prices at the broker level are rising, sometimes sharply. Some brokers are as yet reluctant to sell, hoping for higher prices in a few weeks.

How 'Past Practice' Hamstrings Management

One of the major areas of disagreement in the current steel strike is "past practices" clauses in union contracts. The steel companies are demanding the right to make changes in their plants in the interest of efficiency (The IRON AGE, July 23, P. 31). Here are some cases in point which management lost in arbitration and which the union won on the basis of past practice:

Number of Workers Cannot Be Changed—In 1953, National Tube Div., U. S. Steel installed a new incentive plan. The plan was based on time studies which showed jobs could be reduced. Consequently, five employees replaced seven others when the plan went into effect. But the arbitrator found for the union. His reason: A local working condition of a seven man crew had been established.

Company Cannot Subcontract Work—In 1951, Bethlehem Steel Co. installed three cranes in one of its shops for picking up scrap. Two cranes were operated by union workers, the third by an outside contractor. In 1954, union employees complained they were working only four days a week while the contractors' employees worked five to six days. The company bought the contractors crane and put union men to work on it. In 1957, an outside contractor was called in to handle all scrap. Recovery increased by 50 pct and quality of reclaimed scrap was boosted. The union filed a grievance and the arbitrator found that the 1954 practice set the pattern. The union help was reinstated and reimbursed for lost pay.

Discipline for Absentees Is Limited—At National Tube Div. in 1954, three bricklayer helpers were cut off from overtime work for three shifts as a reprimand for unexcused absences from work earlier in the week. The arbitrator decided in favor of the workers. His reason: The employer had no right to change distribution of overtime pay in the course of an absenteeism reprimand. He cited an established local working condition. The helpers got overtime pay for three shifts they didn't work.

Work Assignments Can't Be Allowed—A. M. Byers Co. attempted to replace "area" or "shop" maintenance crews with a centralized maintenance group. Reason was that shop maintenance crews were idle part of the time. The arbitrator agreed that an area maintenance system was inefficient and high in cost, but since the "local working conditions clause" forbade a change, he decided the company was in the wrong.

---

this area of labor relations.

The Government's concern over the strike is based on other factors besides the inflationary effect that a price boost might have. It's worried over the impact of the walkout on the budget, and the possibility of a threat to defense production.

Budget Is Threatened—Secretary of the Treasury Anderson is afraid a long strike could, through tax losses, put the Government's 1960 fiscal year budget in the red.

Mr. Anderson is not too concerned about the effect of a short strike, but he adds that a long walkout "could reduce revenues in an amount which could not be recovered . . . and could therefore contribute to a budget deficit."

How Treasury Would Lose—The Secretary estimates the strike could cost Government as much as $45 million a week if it is prolonged. He broke it down this way: $30 million a week in revenues from steel company profits, $10 million a week from taxes on steel workers' wages, and $5 million in revenue from taxes on profits and wages in industries hurt by the steel strike.

Regarding steel for defense, the Government is keeping a close eye on the status of steel product availability. While the danger is not considered immediate, there's always the chance that individual defense contractors might find themselves in short supply should the strike go on for a month or longer. If this should happen, it's assumed that these users would have first call on steel in warehouses and in steel plants not affected by the walkout.

The "Emergency" Angle — The Government's concern with the possible effect of the strike on the defense program may sound like it is "borrowing trouble" at this early stage of the walkout. But it could become an important issue later on, should attempts to work out a settlement in the near future prove futile.

Although President Eisenhower is represented as being reluctant to invoke the emergency provisions of the Taft-Hartley Act to get the men back to work, the threat to defense could be used as one of several reasons why an emergency exists should the situation deteriorate to that extreme.

Ike's Reasoning—The President's reasoning on this score is understandable: Once the 80-day "cooling off" provision of Taft-Hartley has expired, the President would have no other weapon at his disposal other than the weight of public opinion to prevent the men from walking out again.

Cold Extrusion Goes Competitive

Growing Market Attracts Equipment Builders

Cold heading machines are now actively competing with presses in cold extrusion work.

Equipment sales are increasing as more companies switch to cold extruding of small steel parts.—By T. M. Rohan.

▪ Cold extrusion of small steel parts—already a growing industry—is now becoming a competitive one.

Entry of cold heading type machines into the field to compete with vertical hydraulic presses has heightened the interest. Nut formers have been redesigned with a longer stroke to allow room for high speed progressive back extrusion, putting them solidly in the cold extrusion picture.

Dual Tryout — Example of the competition: A spark plug company has bought both a vertical hydraulic press and a progressive header to pit against each other in making spark plug bodies.

National Machinery Co., Tiffin, O., and Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. —the two major cold heading machine builders—have between them already made one or two dozen multi-stage cold formers. To avoid premature optimism the builders, in most cases, have been pledged not to publicize the projects.

A few European machines have been coming into the market, too. One features a unit where the work pieces progress vertically downward.

The Breakthrough — The trend to cold extrusion began about two years ago when auto companies decided they had enough volume to make it economically feasible.

Now auto plants are cold extruding millions of hollow piston pins from sheared rod blanks faster than they can bore them out on screw machines. Other simple parts like bearing cups and hydraulic valve lifters are also being banged out. Some hot forming jobs are being converted to cheaper cold extrusion.

Faster Production — For small parts the production rates are multiplied many times over conventional automatic screw machines. A cold extruder, for instance, will turn out 70 piston pins per minute compared to about 3 or 4 per minute with an automatic. Spark plug bodies shoot out at 60 per minute contrasted with two or three per minute on an automatic. Scrap loss is an almost neglibigle 3½ pct.

A dozen or more firms are now quietly experimenting with extending cold extrusion to more complex spark plug bodies, carburetor fuel line couplings, tube nuts and fittings of various types. Aluminum, brass and copper pieces are also being studied for conversion.

Work in Progress—Most production work now is being done in Michigan and Indiana auto plants turning out piston pins and valve lifters for the parent firm. A Grand Rapids plant is turning out 80 parts a minute from C-1016 drawn wire without end coating. Pottstown Div. of Dana Corp., Pottstown, Pa., is hitting a 60 per minute rate on universal joint bearing cups using C-1008 drawn wire on a ¾ in. machine.

Another automaker and an independent Chicago area plant are turning out piston pins on a vertical press. A Cleveland auto parts supplier is trying out extruding fuel line couplings and a fastener firm is using a three-stage die attachment experimentally.

The trend to cold extrusion is catching steel mills in a traditionally sensitive spot—annealing capacity. To keep die wear down, the cold extruders need soft, ductile,

What is Cold Forming?

The Method: Cold formers are basically similar to transfer header units except stages and length of the stroke are increased. Coiled wire or rod is fed off a reel.

At the first station a slug is sheared off and is moved through as many as six adjacent forward and back extrusion dies by transfer fingers. With some units the workpiece can also be turned between stations and the timing varied.

The Costs: In some cases, regular cold headers have been converted to cold extrusion work by an adapter for the dies and a transfer mechanism. The extrusion presses, however, cost less than conventional large cold headers—about $175,000 to $200,000 compared to about $250,000 for a cold header using up to about 1¼ in. wire rods.

The Market: Independent fastener producers generally feel the major immediate market for the progressive headers will be in auto plants where big runs of straight line production are possible. Even there the shift will probably be relatively slow because the line of application is narrow. In addition there are already thousands of highly versatile automatic screw machines in operation.

spheroid-annealed rod taking up to about a 20 hour heating cycle.

Emphasis on Annealing — "We and the rest of the steel industry never seem to have enough annealing capacity and this shift to cold extrusion is already turning into a strain," says one Cleveland steel mill engineer. "We will probably have to install more annealing capacity for this in another year or two. The whole emphasis is on more scarfing, cleaning, and billet preparation by mills for a more uniform steel."

The demand for rod for auto piston pins and lifters alone in Michigan and Indiana has caused suppliers to expand. Republic Steel is installing two new continuous annealing furnaces at its Chicago plant and may put them in other locations. Jones and Laughlin is considering them for its Pittsburgh mill. American Steel & Wire Div. of U. S. Steel last year installed the largest furnaces of their type ever built at its Cleveland and Waukegan, Ill., plants to keep up with demand in the cold heading and extrusion trade.

Additional Sources—Other major suppliers are Bethlehem Steel's Johnstown, Pa., mill and Youngstown Sheet and Tube Co.'s Youngstown, O., mill which turns out "scrapless nut quality" wire.

Better Dies Help—Steel mills are getting an assist from die designers. Originally dies wore out quickly so extruders used high quality cold drawn annealed bars good for close surface and internal specifications.

Such extra preparation methods as grinding and scarfing of billets and removal of all furnace scale were needed to cut die wear under the rapid severe deformation pressures. Now die design has been improved so quality requirements of the steel are not as severe and producers have recently lowered the quality extra to 85 cents. Diameters originally ranged from ⅜ in. to about ¾ in. maximum but are now up to 1¼ in.

Pay Hikes in the Office

Average weekly salaries in U.S.	1957	1959
Accounting Clerk, senior	$87.00	$93.00
Bookkeeping Machine Operator	57.00	60.00
Clerk, General	67.00	74.00
Payroll Clerk	71.00	76.00
Tabulating Machine Operator	75.00	86.00
File Clerk	53.00	55.00
Secretary	83.00	89.00
Stenographer	67.00	73.00
Typist	60.00	66.00
Telephone Operator-Receptionist	61.00	65.00

Source: National Office Management Assn.

Office Pay Goes Up

▪ A $6 weekly increase in clerical salaries during the past year has boosted the average pay of clerical employees in the U. S. to $70, according to the National Office Management Assn.

In arriving at the salary average, NOMA surveyed 6,762 companies in 114 cities throughout the U. S. Data are based on 23 office jobs considered to be the most common for all types and sizes of companies.

The $70 a week pay rate does not include bonus pay, NOMA points out. Employees are not included who are normally considered to be supervisors, who are part time workers or trainees, or whose jobs are unusual or non-standard.

Here are some other trends uncovered by the survey:

Work Week—The 40-hr basic work week is still standard for a majority of companies in the U. S. Sixty-eight pct of reporting firms still work a 40-hr week; 12 pct report a 37½-hr week; 5 pct say a 35-hr week is standard. Four pct show a basic work week of over 40 hours. Weekly overtime is paid after 40 hours by 72 pct of the firms.

Holidays — Six paid holidays a year is still the most popular in the U. S., but it is losing ground fast. Granting of seven holidays a year was indicated by 28 pct of the respondents. and 31 pct said they grant eight or more.

Unionization—A slight decrease in the unionization of office employees was reported this year. Slightly less than 8 pct indicated that all or part of their office force was unionized, while 92 pct indicated no unionization. The highest areas of unionized office employees are the West and West Central U. S., respectively.

Ratio of Office Workers — The ratio of total workers to office workers reported is 3.06 to 1. Last year's ratio was 3.3 to 1, indicating that the ratio remains fairly stable at 3 to 1. Trend figures show that as the total non-office work force increases, the number of office employees increases proportionally.

More Aluminum Freight Cars

Railroads Like the Bigger Payload They Carry

Approval of an aluminum hopper car for U. S. interchange is a breakthrough.

How big is this market for aluminum? Reynolds sold 18 million lb in a single order.—By F. J. Starin.

▪ It's a big year for aluminum in the railroad market.

Aluminium Ltd., the Canadian aluminum maker, and the American Assn. of Railroads announce jointly that an all-aluminum, welded hopper car has been conditionally approved by AAR for interchange on U. S. railroads.

Breakthrough — This means the railroad standards setters now consider the aluminum carrier sturdy enough to take the abuse and strain of constant use right along with the traditional steel cars. Aluminium, which has been working for years to crack this market, calls the approval a breakthrough that will result in more and more aluminum rolling stock.

Reynolds Metals Co. puts the whole picture in sharp focus. It announced earlier this month that it will supply 18.7 million lb of aluminum—13.8 million lb of plate, 4.4 million lb of extrusions, and .5 million lb of miscellaneous items—for production of 1205 aluminum railroad cars for the Southern Railway System.

Of the total, 455 covered hopper cars will be built by Magor Car Corp., Clifton, N. J., and 750 gondola cars will be made by Pullman Standard Div., Pullman Inc., Bessemer, Ala.

Reynolds Scores — David P. Reynolds, executive vice president of Reynolds Metals Co., notes: "From the viewpoint of the aluminum industry this is a major milestone. . . ."

According to Aluminium Ltd's Director of Railroad Development, R. A. Campbell, it is no accident that the market is beginning to blossom now. In addition to working on designs that would make the most efficient use of aluminum, Aluminium has been aiming to accomplish this without radical changes in fabricating and maintenance techniques or equipment.

Same Equipment — Railroad car builders can now make aluminum cars using the same large welding jigs they have been using on steel. Only the welding head is changed to convert to aluminum.

Aluminum-magnesium alloys are being used to make the rolling stock. These alloys are easily welded with inert shielded arc.

Testing — Modern testing equipment has also made a difference. Until recently AAR generally withheld interchange approval until a car had proved itself in use.

With the all-aluminum, welded hopper car, Aluminium smacked a couple together about 75 times, replacing the coupling with a dynamometer and a number of strain gages. The car was also subjected to extensive shakedown fatigue tests with 36 strategically located strain gages to record the reaction.

These tests are recognized as the equivalent of years of actual service.

Economics—After all is said, the bill for an aluminum railroad car is higher than for steel. But the aluminum companies have some pretty impressive answers.

Reynolds notes that aluminum railroad cars carry larger payloads, from five to eight tons more depending on the type; are easily and more cheaply maintained, and have a longer service life and higher salvage value.

How Aluminum Compares With Steel

	Payload (lb)	Cost
Hopper Car—All aluminum	178,000	+30 pct
Aluminum body	174,000	+20 pct
Steel	162,000	base
Box Car—All aluminum	136,000	+35 pct
Aluminum body	132,000	+19 pct
Aluminum sheathed	128,000	+ 9 pct
Steel	124,000	base
Covered Hopper Car—All aluminum	176,000	+23 pct
Aluminum body	172,000	+12 pct
Steel	154,000	base
Refrigerator Car—All aluminum	120,000	+15 pct
Steel	96,000	base

Source: Aluminium Ltd.

Manufacturers Agents: The Pros and Cons

The reputable manufacturer's agent offers these advantages to a manufacturer:

Low Selling Expense — An agent works on a definite percentage commission and is paid only for actual orders, thus stabilizing the percentage of sales cost.

Specialization — An agent usually carries only related lines. When he takes on a new product, he generally can grasp its application in a minimum of time. He knows who the prospective users are in his territory.

Remote Market Coverage—Because he carries more than one line, an agent can cover sparse markets or sparsely settled areas satisfactorily.

Seasonal Products — Where the product is seasonal or faddish in nature, agents are generally accepted by the trade as the best means of distribution.

Immediate Representation—By using the agency method of selling, a manufacturer can get quick national representation.

If all these advantages can be had by using agents, why do some companies shy away from them? Here are some of the reasons:

Lack of Control—A manufacturer has little control over the sales effort put forth by his agent.

Dilution of Market—An agent who has two or more lines can devote only part of his time to your product.

Loyalty—If the commission for one product is higher than for others, an agent may have a tendency to push the more profitable line and neglect the others.

Who Can Sell Your Product Best?

Most companies prefer to market products through their own sales organizations.

But sometimes an agent can do what a company can't do effectively.

▪ "Any marketing manager strives to reach the point of having his own sales force," comments the head marketing man for a major manufacturing company, "but sometimes he can't avoid using agents."

His statement reflects a general feeling of wariness among sales executives of the independent, free-wheeling, and sometimes crafty breed of salesmen known as manufacturers' agents. Yet in spite of this feeling, the number of agents in the U. S. today probably is higher than at any time in history—and for good reason. Agents are often the most economical and effective means of distributing a product.

Campaign for Ethics—An estimated 25,000 manufacturers' agents are doing business in the U. S. and "the number is steadily increasing," reports the Manufacturers' Agents National Assn., Alhambra, Calif. The association, with 2500 members on its rolls, is striving to improve the prestige of agents, to promote the use of a standard form of agreement, and to eliminate unfair practices on the part of the agent or his principal.

A manufacturer's agent, according to MANA, is "an individual or firm which, acting as an independent contractor, does or is privileged to represent two or more manufacturers on a commission basis within a specified territory."

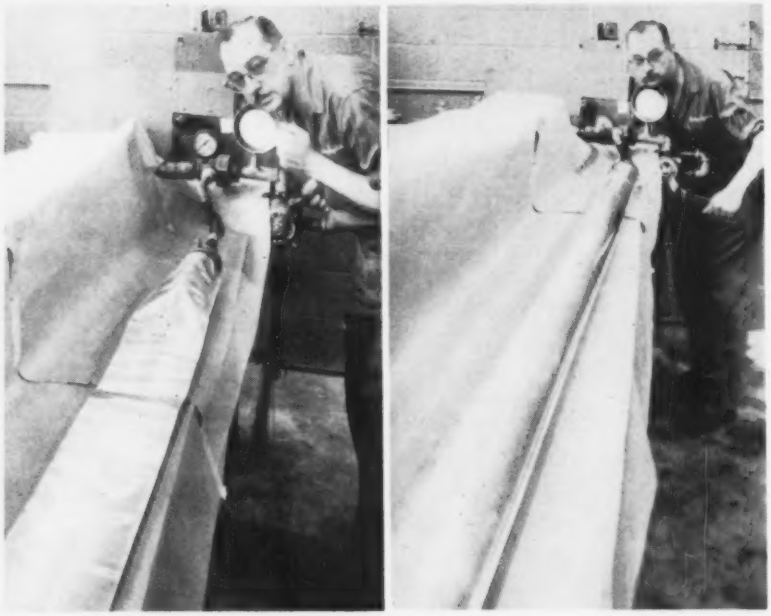
Some Are Respected—But while sales executives tend to regard agents as a necessary evil, there is a solid core of agents who have earned the respect of manufacturers as trustworthy, dependable, and thoroughly ethical.

"A good and successful manufacturer's agent generally works himself out of a job," points out another sales executive. "He develops one or two major lines with his eyes wide open—knowing that he will eventually lose the account." Consequently, the successful agent is constantly bringing in new minor lines, some of which may eventually become his major lines.

Desire to Control—"But when you contract with an agent, you are not building your own future," observes the marketing executive. "It is a great benefit to build your own organization."

While the agent method of selling has its pros and cons, frequently it is the only way a small manufacturer can get going with a new product.

It Comes Without the "Hole"



BLOW UP: What do you call strip that's really tubing? Wolverine Div., Calumet & Hecla, Inc., decided on Strubing. Customer buys tubing in the form of a flat "ribbon." It's easier to install, then inflate. Wolverine says Strubing makes it possible to ship all the ductwork needed to heat a seven-room house, in an orange crate.

The Case for Better Depreciation Law

A more realistic depreciation law is closer. In Washington, two new and separate actions indicate both Congress and the U. S. Treasury now recognize the failure of existing depreciation laws.

While firm relief is still many months away two new Federal actions indicate it will come eventually.

Treasury Poll—First, the U. S. Treasury, after much prodding by industry, is now polling selected U. S. machinery users for their views on depreciation. The responses will guide the Treasury in presenting recommendations on depreciation legislation to the House Ways and Means Committee in November.

Also, the Senate Small Business Committee, responding to urgent requests from the capital goods industries, listened for a full day, on July 24, to management men and tax attorneys concerned with the depreciation problem.

Solid Opposition — Relief won't be won easily, however. Many politicians will resist, claiming any rewrite of the depreciation laws will mean favoritism for the machinery industry, and other capital goods industries.

Here are highlights from testimony presented at the Senate Small Business Committee hearing:

Joel Barlow, Tax Attorney—The U. S. is, unhappily, the most backward nation in the world today in matters of depreciation policies. The answer: The so-called bracket method, whereby a taxpayer can select any rate within a prescribed bracket.

I. D. Shapiro, United Iron & Metal Co., Baltimore—We need a method which would adjust historical cost depreciation to current dollar cost. This could be done by relating the original cost to some kind of index that would help keep this cost in terms of current dollars.

Robert Leeson, President, Universal Winding Co. — Substantial reform is necessary. In terms of degree, it must go much farther than that enacted in 1958.

Frank M. Cruger, Indiana Mfg. Supply Co., Indianapolis — More rapid depreciation would enable small businessmen to invest in additional plant and equipment. Realistic depreciation will not be inflationary because it would be based on, and justified by, increases in production.

Stainless Sinks

A survey of sink fabricators by Allegheny Ludlum Steel Corp. indicates that by 1970 seven out of every 10 new homes will have stainless steel sinks.

The company figures at this rate 20,000 to 23,000 tons of stainless will be used annually.

Beryllium Technique

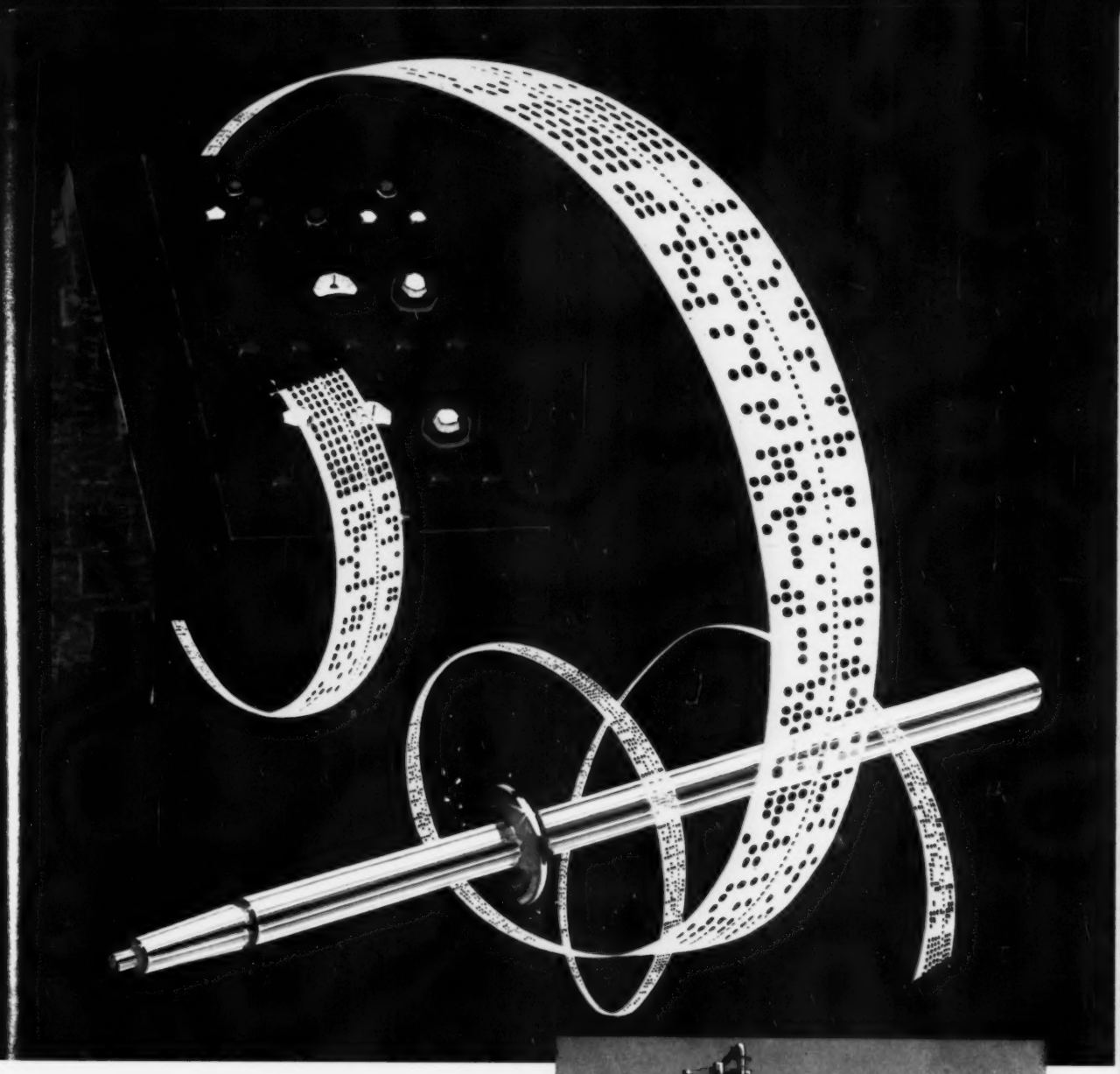
Instead of hot pressing the 13 beryllium plates that were required, Brush Beryllium made one thick piece and sliced it up. The time per cut on a DoAll high speed steel saw band averaged 12 hours. But the company figures it saved over 1000 lb of beryllium, about $50,000.

Sands Re-Enlists

A leading member of Washington's executive reserve has signed up for a second hitch. He's James H. Sands, executive vice president of the Eclipse Fuel Engineering Company, Rockford, Ill.

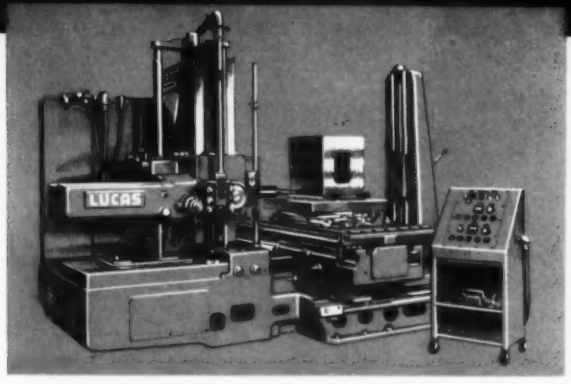
The executive reserve is a voluntary organization of management men who agree to serve the government on mobilization matters.

Earlier this year, Mr. Sands completed a tour of duty as adviser to Director, Niels Olsen, of the Metalworking Equipment Div., Business and Defense Services Administration.

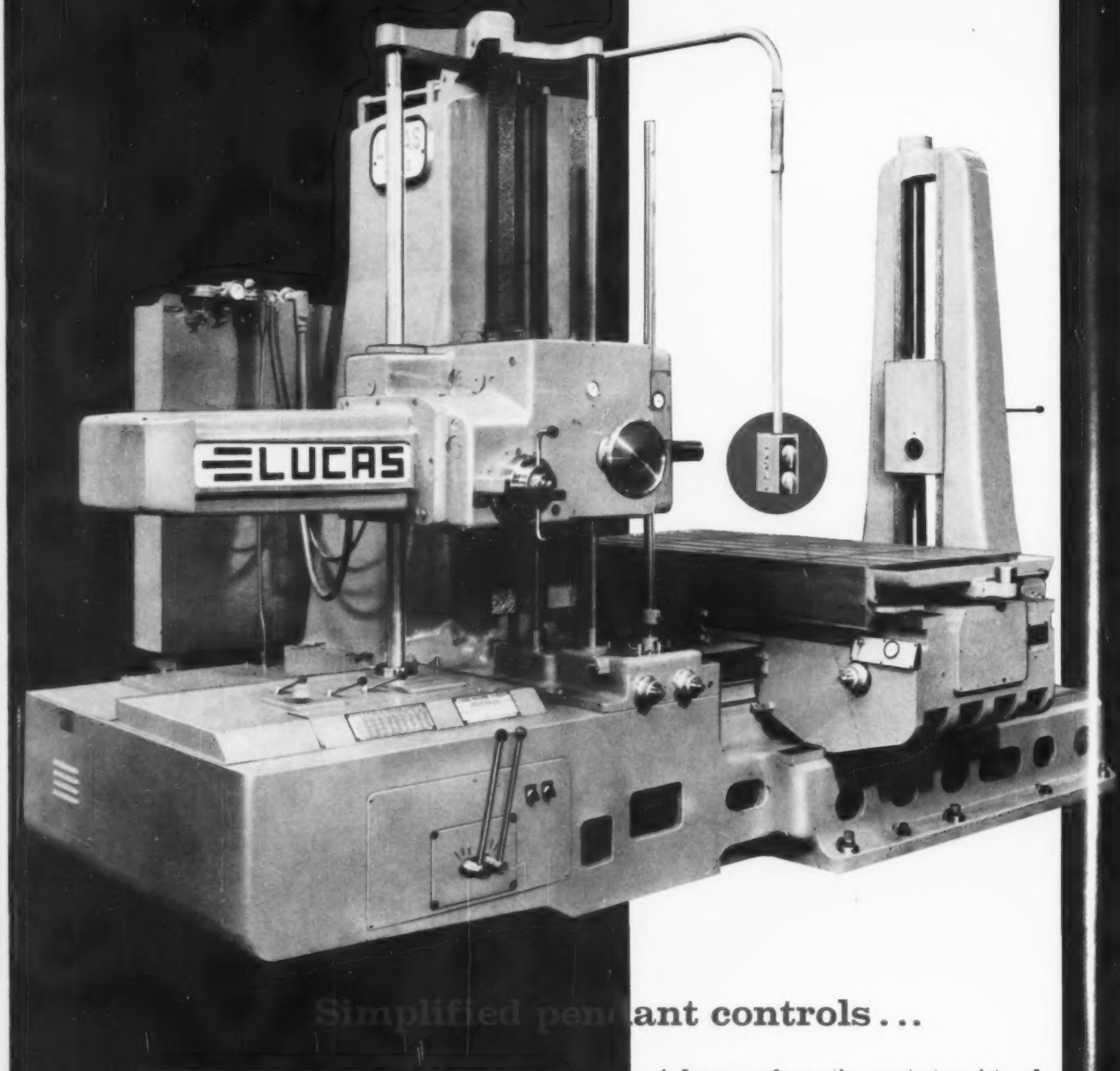


Tape control... certainly!

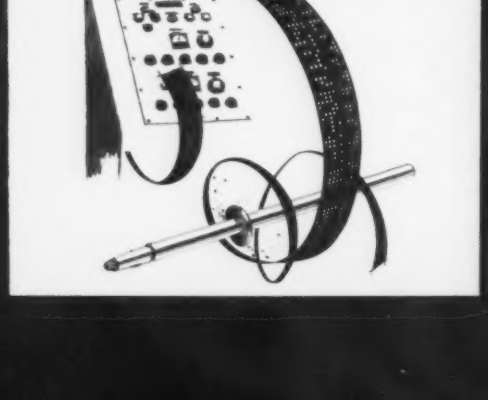
Tape control can readily be applied to any Lucas model, (2 3/4" to 6" diameter spindles) if repetitive operations or complicated one-of-a-kind jobs make this new development advantageous. Lucas tape controlled machines are available with punched tape for N.P.C., magnetic tape for contouring, or tape and tracer control. If you have a profitable use for *any* type or size of horizontal boring, drilling and milling machine (up to 6" spindle capacity) you can get it at its best from the specialist in this type of machine. *Did you ever meet a man who regretted picking a Lucas?*



LUCAS
OF CLEVELAND



Simplified pendant controls . . .



A Lucas performs the greatest variety of operations possible in any machine tool. Standard models permit control of *all* operations from the pendant. Optional pendant and lever control machines, like the one shown above, combine a simplified pendant with readily accessible levers. Whichever type of control you want—pendant, lever, tape, tracer or any of these in combination —Lucas has it.

LUCAS
OF CLEVELAND

Ellsworth M. Smith

The Taming of a Problem Alloy

Beryllium copper has become a useful alloy, especially in instruments and electronics.

But not so long ago it was a maverick metal—tricky and hard to control.

ELLSWORTH M. SMITH: Improved mill practice is a constant goal.

▪ Taming beryllium copper's erratic ways was an absorbing task for early researchers. The alloy wouldn't conform. It defied uniform engineering properties during annealing. It refused to respond in a normal way to age-hardening. During heat treatment, a hard oxide film formed on its surface which raised hob with dies. It led scientists on a merry chase before they finally got the unpredictable alloy under control.

Taking part in a three-year study of beryllium copper during the early 1940's was youthful Ellsworth M. Smith, then an assistant metallurgist at Beryllium Corp. That study led to the development of the first practical protective atmosphere melting technique for the alloy.

Put to Work — Now 36, Mr. Smith is manager of Pennrold Div., The Brush Beryllium Co., Reading, Pa. After more than 15 years, the alloy has been tamed and put to work. It has become one of the more useful materials available to makers of instruments and electronic components.

Pennrold 25 alloy, for example, is a heat treatable beryllium copper alloy which possesses the highest mechanical properties of any copper base alloy known, says Mr. Smith.

Some of its present uses: For current-carrying springs, diaphragms, switch blades, contacts, connectors, terminals, fuse clips, and bellows.

New Uses Ahead—But while the major obstacles have been overcome, Researcher Smith is still busy with refinements. Improved mill practice is a constant goal. Under his direction, Pennrold has developed new techniques for making a mill-hardened alloy which can be formed directly into finished shapes without need for subsequent heat treatment.

He is bent on exploiting to the fullest beryllium copper's other desirable properties — great strength, endurance, and excellent electrical characteristics.

Forms Own Company — Born and raised in Reading, Mr. Smith attended Albright College and Temple University. He was chief metallurgist at Beryllium Corp. in 1947 when he left to organize Penn Precision Products.

In 1958, Penn Precision Products merged with Brush Beryllium and Mr. Smith became division manager of the new affiliate, renamed Pennrold. His division became a leader in production of ultra-thin (down to one-half mil) beryllium copper products.

Likes His Work—A dedicated man, he puts in about 70 hours a week—either in his office, in the plant, his laboratory, or at home in his private work shop. Over the years, he has co-authored several articles on the problems of forming, heat treating, and hardness conversion of the one-time maverick metal.

BROWN LIPE CHAPIN

New Chrome Plating advance gives bright work new dimension in durability!

Here's a shining example of the many benefits available for your products at Brown-Lipe-Chapin. It's Brown-Lipe-Chapin's new DURA-PLATE! This new and unique process of chrome plating gives your product active sales appeal with the rich quality of gleaming chrome . . . and adds a new depth of durability that will last the life of your product.

DURA-PLATE consists of two layers of laminar and columnar nickel with a layer of chrome *five times as thick* as produced by conventional methods. The result is a surface almost impenetrable to corrosion. DURA-PLATE can be applied on any product made of steel, or on zinc die castings . . . at no extra cost!

DURA-PLATE is the result of the advanced research, the development of new techniques and thorough testing that continue at Brown-Lipe-Chapin to help make your products better.

DURA-PLATE is typical of the many benefits you get from Brown-Lipe-Chapin when you call on their extensive facilities for die casting, metal stampings of all kinds, electroplating, anodizing and painting.

If you're looking for a bright difference in your product, call on Brown-Lipe-Chapin, Division of General Motors Corporation, Syracuse, New York.

GM GENERAL MOTORS

RELIABILITY by BROWN·LIPE·CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

Will Strike Slow Down Economy?

Despite the immediate losses from the steel strike the long-range outlook isn't bleak.

Pattern of recovery from previous shutdowns indicates what to expect.

▪ Will the steel strike cripple the economic upturn?

The answer depends on whether you take the short term or the long-range view. The immediate effects have, of course, put the brakes on much industrial activity. For the struck steel mills each day the strike continues means losses in production and sales. Related industries such as mining, shipping, and the railroads are also suffering.

Consumption Important—But beyond these inevitable effects of the strike there seems little chance for permanent damage to the economy. The reason: As the strike progresses so will steel consumption. Customer inventories will be pared down. And the groundwork will be laid for a steel order surge when production resumes.

What Happened in '52—Take the disastrous steel strike in 1952 which lasted two months. During its course in June and July the steel operating rate fell to about 17 pct. But once the strike ended in August it rebounded to 92 pct. And it stayed well above 100 pct for the rest of the year. Similarly the government's index of industrial production sagged to 108 in July, 1952. With the strike ended in August it went up to 123. During the balance of the year it remained in the 130's.

And in 1956—Following the 34-day steel strike in July, 1956, the economy retraced the same path. Steel output climbed back to 74 pct in August, hit 98 pct in September, and hovered around 100 pct through December. The industrial production index followed steel output upward. After the strike low of 128 in July, it rose in succeeding months to 151 by October.

All this proves the economy's built-in needs usually promote quick healing once a strike is over. The process may be slower this year unless a prolonged shutdown completely exhausts steel supplies. That's because steel users, forewarned months ago, had an excellent chance to fatten inventories.

But, despite this, there's little reason why the recovery pattern from this year's steel strike should differ from those in the past.

Import-Export Ratio Narrows

▪ Steel imports cast their shadow over the bargaining table in the days before the strike. Concern over the growing tide of imports was one reason why management balked at wage increases which would require domestic price boosts in steel.

This attitude was clearly hardened during the recession when American exports fell off, but imports held about even.

Exports Slumped—A close look at what the recession did to exports and imports, as well as other aspects of the economy, is contained in the Commerce Dept.'s latest estimates of national income and product during 1958.

Imports, according to the report, were $21.3 billion last year, the same amount as in 1957. Exports, however, dropped more than $3.5 billion, from $26.2 billion in '57 to $22.6 billion last year.

Slim Margin—Even with the end of the recession, exports have not shared in the general recovery. During the first quarter of this year they exceeded imports by only $459 million. This margin was slimmer than that for any of the four quarters during 1958.

Recession Analyzed — Reasons why metalworking endured such a poor year in 1958 are underscored by the survey. While the gross national product dipped a little ($441.7 billion as against $442.5 in 1957) personal spending actually increased.

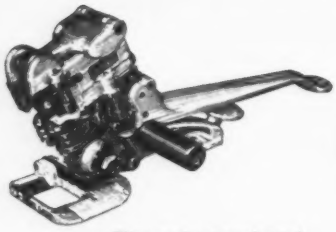
But the gains were in nondurable goods and services. Durable goods spending declined from $40.3 billion in '57 to $37.6 billion last year.

Personal Income Rose During June

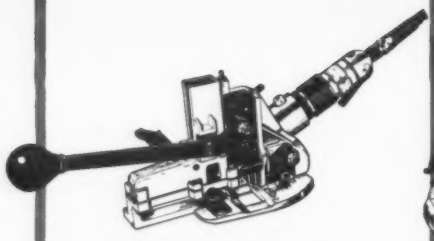
Wage and salary advances were largely responsible for an increase in personal income in June, the Dept. of Commerce reports.

For June personal income, seasonally adjusted, was at an annual rate of $383 billion—$1.5 billion higher than in May.

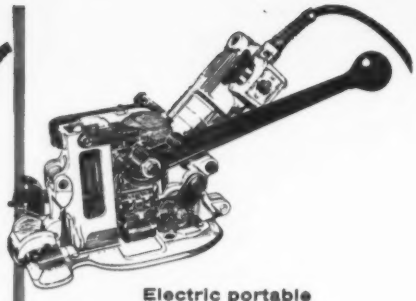
Half of the increase in wages and salaries came from increased manufacturing employment. Largest gains in payrolls were in the metals, machinery, and stone-clay-glass industries.



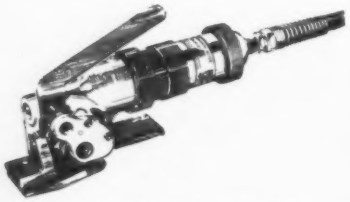
The only one-hand strapping tools
SFC Series



Air power portable strapping machines
AP Series



Electric portable strapping machines
AE Series



Complete line of air power tensioning tools
PN Series

The only air power feed wheel tensioning tool for heavy duty strapping

FN Series

Heavy-duty air power sealers
N Series

Make your product cost less to handle, store, ship, and receive

Binding things together with steel strapping is a low cost way to eliminate individual handlings, save space, and prevent damage. These nine machines—part of the most complete line of equipment in the steel strapping industry—create new ways to save with strapping. Signode will be glad to help you select the right equipment and devise methods to make the most of it. There's a Signode man near you. Call him today, or write:

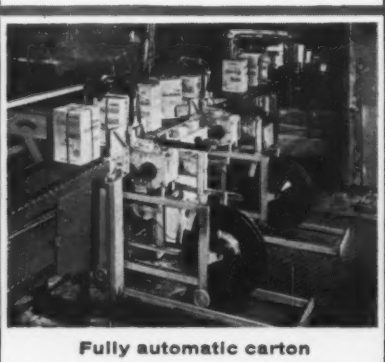
First in steel strapping

SIGNODE STEEL STRAPPING CO.

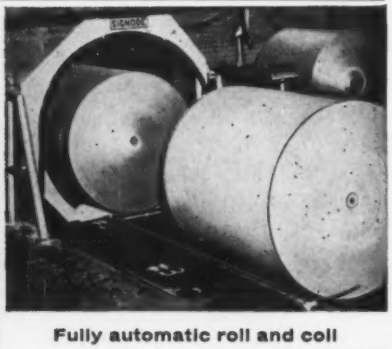
2623 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Power strap feeders
Model PSF



Fully automatic carton strapping machines—Model M2N



Fully automatic roll and coil strapping machines Model M20RB

Vinyl Coatings Make New Gains

Auto Stylists Are Impressed by Its Strength and Economy

Right now, Ford's Thunderbird is the biggest user of vinyl laminated metal.

But worldwide production is expected to reach 140 million sq ft by 1960.—By H. R. Neal.

Prospects are good that vinyl coated metals will be used in greater amounts by the auto industry in another year or so. Although vinyl plastic sheet laminated to steel, aluminum, and magnesium is being used by an increasing number of manufacturers for such items as luggage, furniture, appliances, photographic equipment, boats, radios and television sets, only one make of car is currently using the material.

Ford Motor Co.'s Thunderbird uses about 30 sq ft of vinyl laminated metal for some 14 interior parts in its 1959 models. These uses include crashpad ends, seat sideshields, garnish moldings, and rear seat back panels.

Ford Is Licensed—Over the past several years other automakers have also employed plastic coated steel for interior uses—Cadillac, Pontiac, Studebaker, and several Chrysler divisions. For the most part, they seem satisfied with the results, but discontinued its use for various reasons. None, however, has ever used as much as the Thunderbird.

Last week Ford became the first automaker to be licensed by the Naugatuck Chemical Div. of United States Rubber Co. to use the firm's Marvibond process for continuously laminating "decorative and durable" vinyl plastic sheet to metal.

"A Logical Step"—Ford is also the first licensee of the process that makes both its own vinyl plastic film and steel. Ford is the nation's 13th largest steel producer. A year ago the automaker activated a chemical products plant in Mt. Clements, Mich., to make unsupported vinyl film.

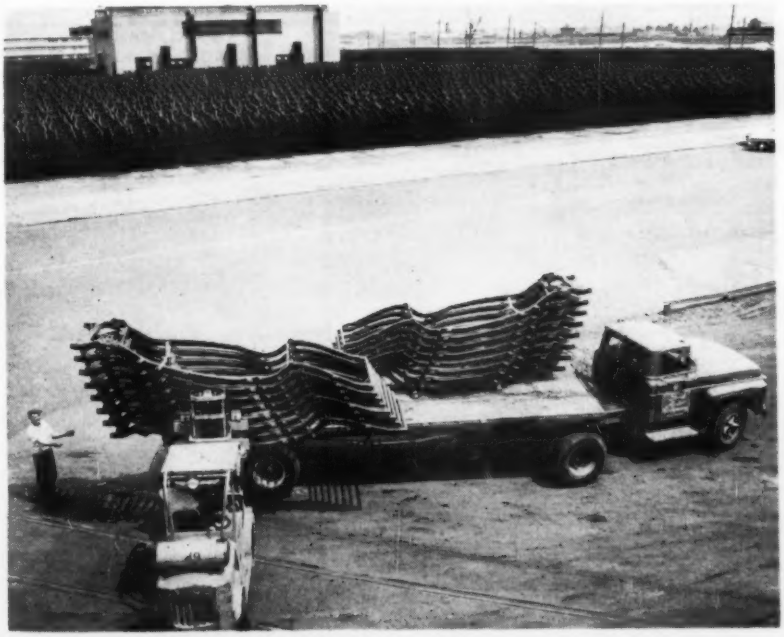
"As a basic producer of both steel and vinyl, the adoption of the Marvibond process for lamination of these two components in vinyl-clad steel is a logical step in the development programs currently underway in these divisions to improve the quality and utility of these basic products," explains Irving A. Duffy, Ford group vice president.

Continuous Coating—The laminating process is a method for continuously coating metal with semi-rigid plastic sheet. The plastic used can be produced in a variety of colors and textures to simulate wood grains, leather, etc.

After coating, the metal can be shaped and fabricated with virtually any metalworking technique, including spot welding, without damaging the plastic facing.

New Styling Possibilities — Ford styling chief George W. Walker looks for vinyl coated metals to be used for exterior as well as interior

It's Changeover Time in Detroit



FORD FRAME STOCKPILE: Fifty thousand auto frames are stacked and waiting at Ford Motor Co.'s Dearborn frame plant for final 1959 production runs. Stockpile will allow early changeover to 1960 model frames.

applications in the future. "Vinyl-clad steel opens broad and exciting new avenues for the automotive stylist. For one thing, it offers that combination of economy, structural strength, and beauty which is always sought after in car designs," he says.

"It's most immediate application probably will continue to be in the field of automotive interiors, but I'm sure it can be expected eventually to have marked effect on exterior styling as well. I'm particularly optimistic about the possibilities it offers in simulating fabric and wood finishes where cost consideration might prevent our using these actual materials."

Tonnage Potential—However, it will be at least another year before cars other than the Thunderbird will make extensive use of vinyl coated metal, according to industry sources.

Naugatuck Chemical's process has now been licensed to 17 American manufacturers, including major steel companies, and in 27 foreign countries. The firm estimates that annual world-wide production of the laminate will reach 140 million sq ft by 1960.

One laminator claims "very superior corrosion resistance" properties for the plastic coating over galvanized steel. For example, he says, all of the automakers are considering the laminated material for station-wagon floors.

Road Financing Plan

The Automobile Manufacturers Assn. has urged Congress to keep the federal highway building program on schedule.

At the same time, it said proposed additional taxes on motorists would be "premature and prejudicial at this time."

Instead, AMA suggested the anticipated two-year deficiency in the road fund should be met by "a form of highway revenue bonding or repayable credit financing," until Congress has time to formulate a sound, long-term highway tax policy.

The Bull of the Woods

THANKS, CHARLIE-- I BEEN TRYIN' TO QUIT, BUT I'M KINDA NERVOUS TODAY!
UH-HUH
OL' CHARLIE IS KEEPIN' TRACK OF ALL TH' CHEWS OF T'BACCER THAT ARE BUMMED OFF HIM IN TH' COURSE OF A YEAR, TO SEE HOW MUCH IT WILL AMOUNT TO!
I DID THAT ONCE BUT I ALSO KEPT TRACK OF HOW MUCH I BUMMED, TOO, AND IN TWO MONTHS I DROPPED TH' SUBJECT-- CHARLIE WOULD THROW THAT BOOK AWAY IN A WEEK IF HE DID THAT!
THE ONE-SIDED STORY
T.M. Reg. U.S. Pat. Off.
© 1959 by NEA Service, Inc.

Automotive Production

WEEK ENDING	CARS	TRUCKS
July 25, 1959*	125,962	26,508
July 18, 1959	127,502	27,111
July 26, 1958	85,519	16,570
July 19, 1958	85,533	16,187
TO DATE 1959	3,721,339	749,492
TO DATE 1958	2,512,829	499,606

*Preliminary Source: Ward's Reports

Detroit Briefs

Record Earnings for Ford—Improved cost control and near-record unit sales have resulted in record first-half earnings of $285.9 million for Ford Motor Co. This is in sharp contrast with the same 1958 period when the company showed earnings of $19.1 million. The company sold 1,158,445 vehicles in the first six months of 1959.

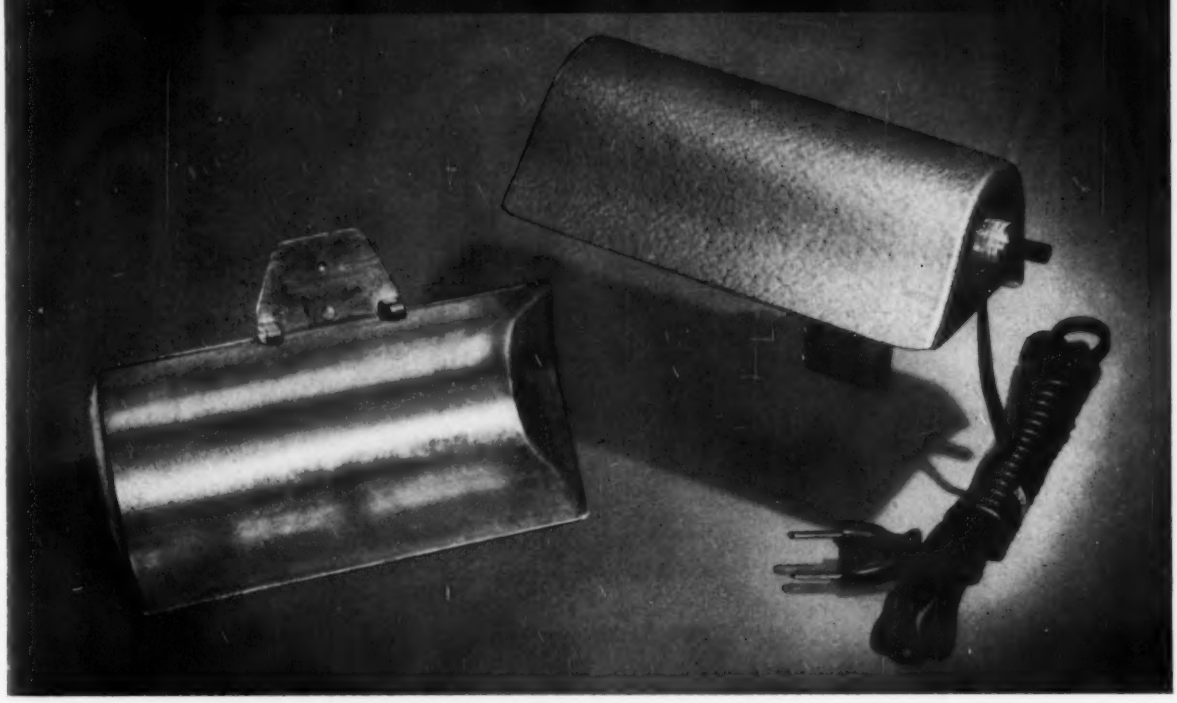
GM in Argentina—General Motors proposed a $20 million expansion of its facilities in Argentina to the Argentine government. The expansion would provide facilities for an annual production of 20,000 vehicles, including light and medium trucks.

Canadian-Built Jeep—Willys of Canada, Ltd., is scheduled to produce the first Canadian-built Jeep at its Windsor, Ont., plant this month. The plant, up until now a vehicle and parts distribution center, has been revamped and equipped for the new assembly operation.

Lower Tire Prices — Goodyear Tire & Rubber Co. has reduced replacement tire prices from 5 to 15 pct on certain of its Custom Nylon and Rayon lines. The adjustment puts prices for 14 in. replacement tires on the same basis as 15 in. tires.

Renault Report — French - built Renault, which had set 100,000 units and first place among imports as its 1959 goal, is behind schedule but doing well enough. First half sales of 40,663 cars was 2⅓ times as many as the 17,446 units sold in the first six months of 1958.

IT'S LIGHTER THAN YOU THINK!



AND EASY TO ASSEMBLE WHEN DIE CAST WITH... ZAMAK

The shade for this new KLIP-LITE* music stand is made of a single thin-wall zinc die casting—for light weight and low-cost assembly. As thin as a stamping but with far greater rigidity, the contours could not be duplicated in sheet metal.

By designing for die casting, only 4 holes are needed before spray finishing and assembling the socket-switch and mounting bracket.

These extremely thin wall sections—possible only with ZINC die castings—minimize weight and are stronger in proportion to thickness than heavier sections.

Parts designed for ZAMAK alloy die casting will meet competition of either stampings or aluminum castings—and at lower cost.

*Made by WIESE MANUFACTURING COMPANY—Davenport, Iowa.

THE NEW EDITION OF "THE END USES OF ZINC DIE CASTING"

SEND FOR YOUR COPY TODAY

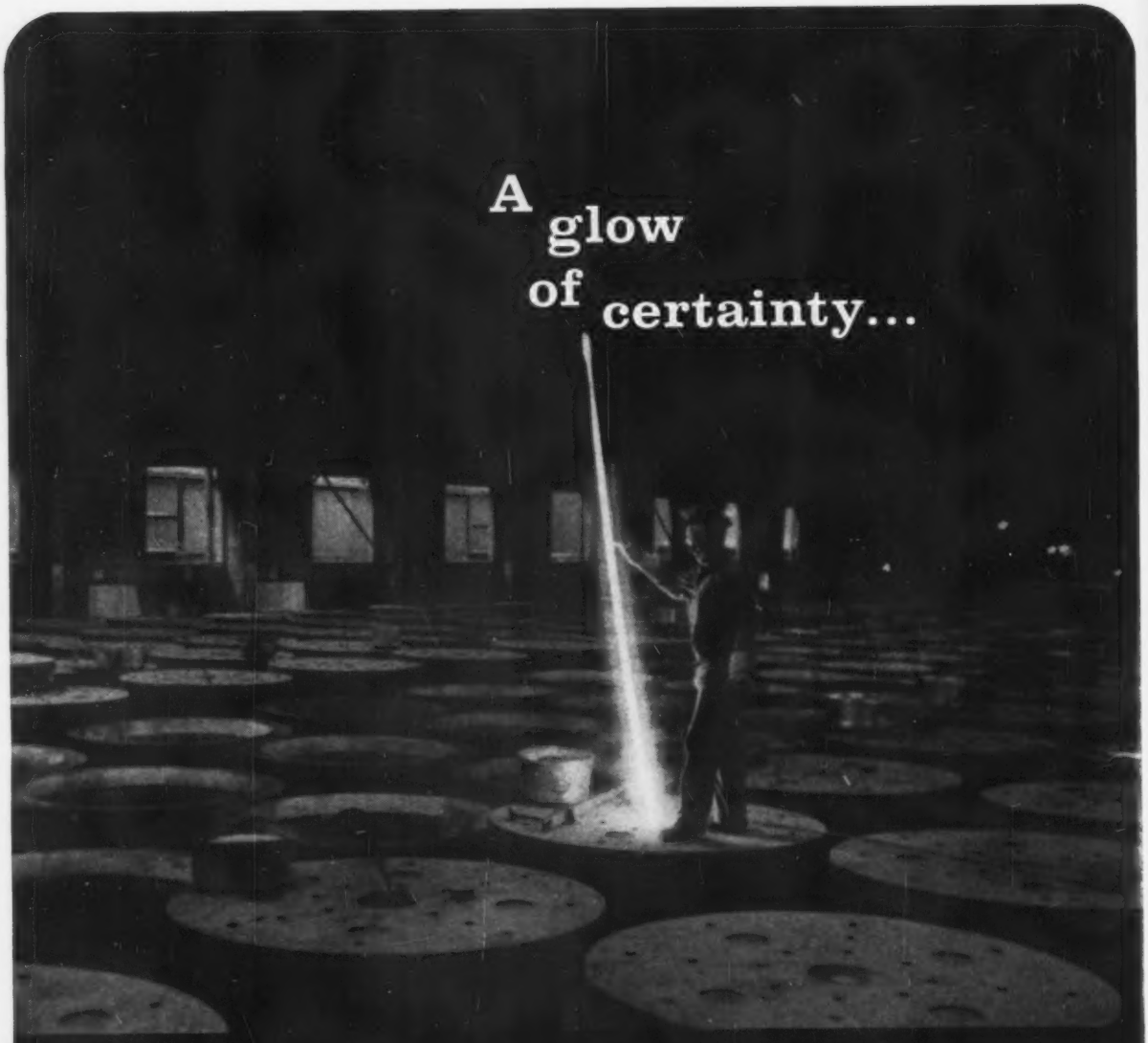
HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street · New York 38, N. Y.

HORSE HEAD PRODUCTS ®



Wherever metal glows white hot and perfection is demanded, knowledgeable technicians call for *ANSCO* X-ray films. That's because *ANSCO* films offer a certainty of flaw detection that insures perfection in single welds, castings or production runs.

Try *ANSCO SUPERAY 'A'*. It's a fast, fine grain emulsion, specifically designed to record high contrast images of the smallest defects in either light or heavy materials with gamma or x-rays.

ANSCO SUPERAY 'B' is a medium speed material of extreme contrast and ultra fine grain . . . unsurpassed in radiographic quality.

ANSCO SUPERAY 'C' offers high speed and short exposure times so desirable in production line inspection. Try these fine films soon . . . you'll glow with certainty—Ansco style! Ansco, Binghamton, N. Y., A Division of General Aniline & Film Corporation.

Ansco

Industrial X-ray

Congress Aims for Labor Day

Legislators Hope to be Able to Adjourn by Then

There's still a lot of top priority legislating to be done.

But leaders in both Houses are putting on the pressure for less talk and more action.—By G. H. Baker.

▪ Congress now hopes to adjourn within four to five weeks. But a long list of high-priority legislation must be acted upon first.

Leaders in both the Senate and the House are applying new pressure on their colleagues for less talk and more action.

Effect of Veto—President Eisenhower's handy use of his veto this year presents new worries to Senate and House Democrats. To the surprise of many professional politicians, Ike has shown he's not afraid to shoot down what he regards as irresponsible bills approved by Congress. Now that they've learned this, the leadership is steering its "must" bills through the legislative channels with greater care. It's not easy. They must avoid criticism of weakness from their own political party and also possible veto at the White House.

On the Agenda—Here's the current picture of important bills:

Taxes—No cut. Ike wants higher rates on gasoline, postage. But Congress balks.

Depreciation—Action put off until 1960.

Defense—A $41 billion money bill voted by Congress provides all Ike asks, plus some extras in missiles and manpower.

Foreign Aid — Congress votes $3.5 billion, less than the $3.9 billion asked by the Administration. Cut is due to growing realization that aid programs are shot through with ineptness.

Public Works — Ike frowns on costly new construction projects written into public works program. Capitol leaders trim some items to salvage more important projects.

Labor Reform — House Labor Committee, more responsive to union demands than the Senate, approves a soft reform bill. A knockdown fight on the House floor is in prospect. A White House veto is likely if the end product is a "do-nothing" bill.

Social Security—House tax writers talk of adding health insurance to the social security program, but there's plenty of opposition. Not likely to get anywhere this year.

Highways—Congress must take some positive action to ease the money pinch on roadbuilding. Short-term government bonds are a possibility. Ike's request for stiffer gas tax gets cold shoulder from both Democrats and Republicans.

Minimum Wages — Senate and House Labor Committees study plans to up the $1 per hour wage to $1.25. But final action this year is doubtful. Increasing the minimum quickly shoves up skilled pay, past experience shows.

Hope for a Tax Cut

Don't Hurrah Yet—Prospects for tax cuts next year are a little brighter. But there is little cause for outright optimism yet.

The current business boom is pushing government revenue much higher than forecast. Some experts expect the government to go into the black by $2 to $5 billion in the next fiscal year, which starts July 1, 1960 and spans the 1960 election campaigns. (This compares to a $12.5 billion deficit in the last fiscal year and an expected near-balance this year.)

President Eisenhower, still thumping for "fiscal responsibility," is opposed to any major tax cutting until at least one year of surplus has been applied to the tremendous national debt, now near $285 billion.

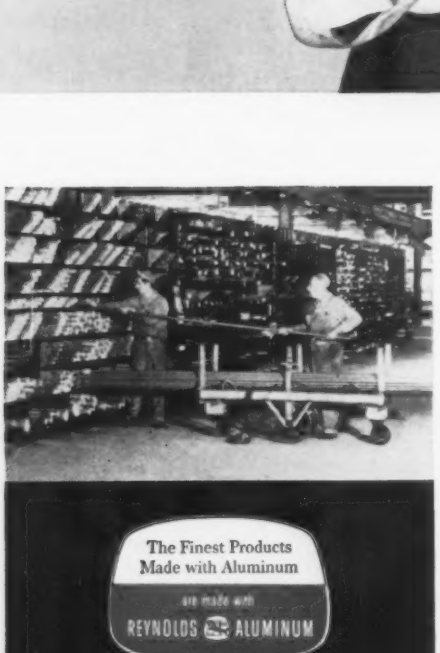
Plug the Loopholes—He might approve tax reform which would tighten up tax loopholes to produce more revenue while at the same time modernizing other provisions such as equipment depreciation which would offset decreases in revenue.

But he would be against any legislation which would produce a net loss of income to the government for at least another year, his top aides say.

The President will not be able to block an election-year tax cut drive in Congress if the lawmakers find they have close to $5 billion to play with.

Break for the Little Guy—One of the proposals the tax-cutters are certain to champion in 1960 is relief for small business. It's an election year natural. Some support is already lining up behind a small business tax proposal of Rep. Abraham Multer (D., N. Y.).

"When I want aluminum and know-how ...I call the Reynolds Distributor."



Maybe you're not sure what's the best aluminum alloy for your product . . . or what machining speed to use . . . or the best way to weld aluminum. The answers to these problems, or to any question you might have concerning aluminum, is as close as your phone.

Just call the Reynolds Aluminum Distributor.

His men are *trained* specialists—yes, *experts*—in the use of aluminum. Chances are, they can show you plenty of cost-shrinking shortcuts, and help you use aluminum to its best advantage.

And, whether you need his technical services or not, you can be sure of the fastest delivery of aluminum—in the shape, size, form and alloy you need—from your Reynolds Distributor.

Watch Reynolds TV show—**"WALT DISNEY PRESENTS"**
—every week on ABC-TV.

FOR FAST DELIVERY ON ALUMINUM, CALL THE REYNOLDS DISTRIBUTOR

Check the yellow pages of your telephone directory, under "Aluminum"

Coming: Triple-Sonic Jet Travel

Coast to Coast Flight in 90 Minutes Predicted

There's only one big obstacle blocking supersonic jet aircraft: The financing.

Engineers have all the needed know-how right now.

But first triple-sonic planes may cost as much as $20 million each.—By R. R. Kay.

▪ By your watch, you'll arrive in San Francisco before you even leave New York. And not too long from now.

Planemakers are making plans to whisk you coast-to-coast in 90 minutes—with TV in place of windows.

Know-how Available — World aviation leaders agree the 2000 mph jetliner is just around the corner. Hall Hibbard, Lockheed's top engineer, says he can put one in the air in five years. Aircraft engineers have all the needed knowledge.

Maj. Gen. John W. Sessums, Jr., vice-commander of the Air Force's Air Research and Development Command, claims that design and construction of a triple-sonic transport could begin today. And he isn't too worried about the bugaboo of sonic booms. It's something he feels we have to learn to live with.

Financing Problems—But financing such a project is the stumbling block. After all, the first of these planes are figured to cost $20 million each. That's a lot of money. And the airlines, with over $1.5 billion worth of 707's and DC-8's on order, just won't be ready for them.

By 1970, however, they should be. That's the opinion of William Littlewood, American Airlines vice-president, and president, Institute of Aeronautical Sciences.

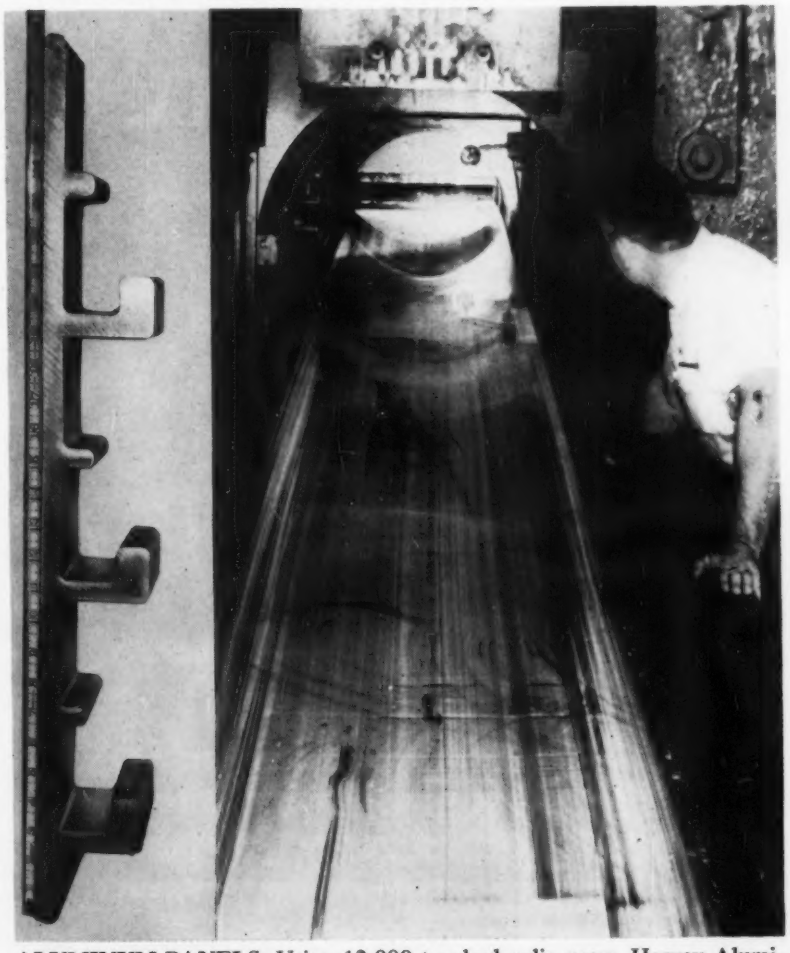
Five Competitors—Convair, Douglas, Boeing, and Lockheed are all ready to work on the plane. Only North American is coy about plans.

However, it's probable that NAA, too, has plans for a supersonic airliner. The company is at work on the B-70 chemically-fueled bomber. A commercial version of this Mach 3 airplane (2100 mph at sea level) is the next logical step.

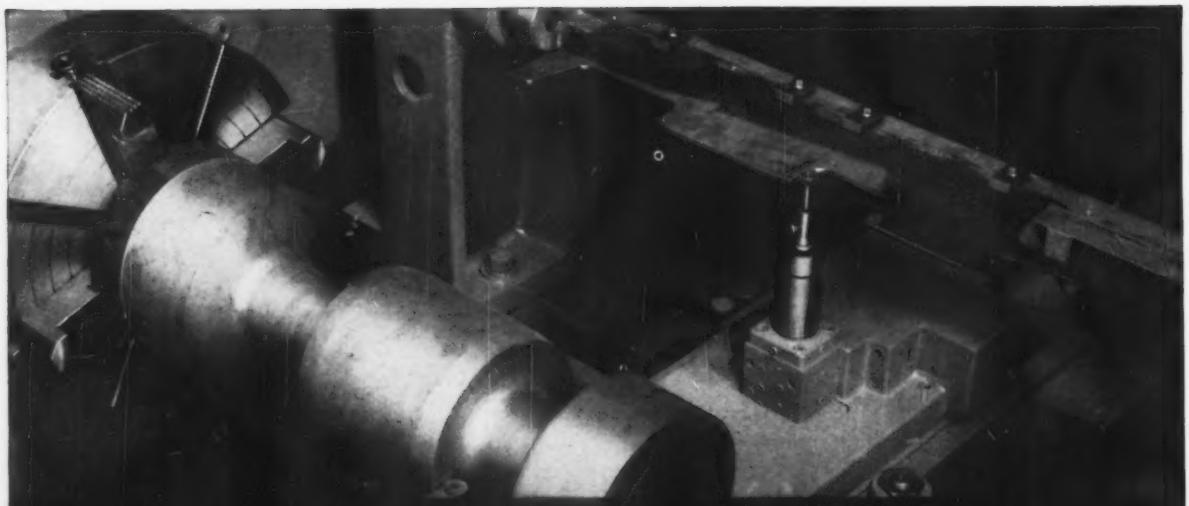
British Views—What's the thinking in Britain about these hot ships?

Peter Masefield says his company, Bristol Aircraft, will be flying a high supersonic allsteel research plane in the "near future."

Extrusion Measures More Than Two Feet



ALUMINUM PANELS: Using 12,000 ton hydraulic press, Harvey Aluminum turns out wide aluminum extrusions measuring 28.08 in. Panels, made of alloy 7178, are then machined into structural wing components.



trace from flat or round templates

with LeBlond's new 90° Tracer

available on 13", 16", 20", 25" and 32" Heavy Duty Lathes; 16", 20", 25", 32" and 40" Standard Duty Lathes

EXCLUSIVE ADVANTAGES: No loss of swing capacity (raises unnecessary). Tracer system allows full horsepower at tool.

All hydraulic controls conveniently located at apron — change from trace to conventional simply by adjusting two nuts at apron.

No overarms or other obstructions to loading templates — all components, including hydraulic pump and tank, integral with cross slide.

Positive mechanical linkage between stylus and tool slide — no strain on cross feed screw and nut.

Tolerance — .001" on diameter; .001" on shoulder length.

Write today for descriptive bulletin.

...cut with confidence

THE R. K. LeBLOND MACHINE TOOL COMPANY,
CINCINNATI 8, OHIO

LeBLOND of Cincinnati

World's Largest Builder of A Complete Line of Lathes.

Try the "Showcase" Approach

Tools in Action Are Easier to Sell Says Distributor

Harrington - Wilson - Daum is improving its sales picture very noticeably.

One of the key factors, says H-W-D president Daum, is the occasional local show they hold. —By E. J. Egan, Jr.

▪ Some machine tool distributors find that occasional local "shows" are helpful in boosting sales volume.

One recent show, put on by Harrington-Wilson-Daum Corp. at its Mt. Vernon, N. Y., headquarters, featuring a variety of numerically controlled machine tools at work, attracted over 1000 visitors. The five-day open house was held in conjunction with H-W-D's 35th anniversary.

"The showcase technique . . . can and does pay off in increased sales for machine tool distributors," says H-W-D president John H. Daum.

"Machine tools, of course, are not sold on a drop-in basis," he explains. "But we have been agreeably surprised by the increasing number of customers who visit our showrooms regularly to see machines under power and in action."

Show Them How — Mr. Daum feels a live demonstration offers much better conditions for observing machine details than is possible in "the ordinary catalog presentation method." The showroom also provides the company's staff of 14 sales engineers with a "prestige meeting place" in which to give customers a close-up look at machine performance.

The H-W-D president says increasing use of "showcase selling," and more use of regional market research is expanding the business potential and overall volume of his fellow distributors across the nation.

Trained Personnel—"In our own organization," he points out, "we take great pains to make sure the area we serve is completely and capably manned by factory trained sales engineers." They know their products and all possible present and potential uses of these products in our area, he explains.

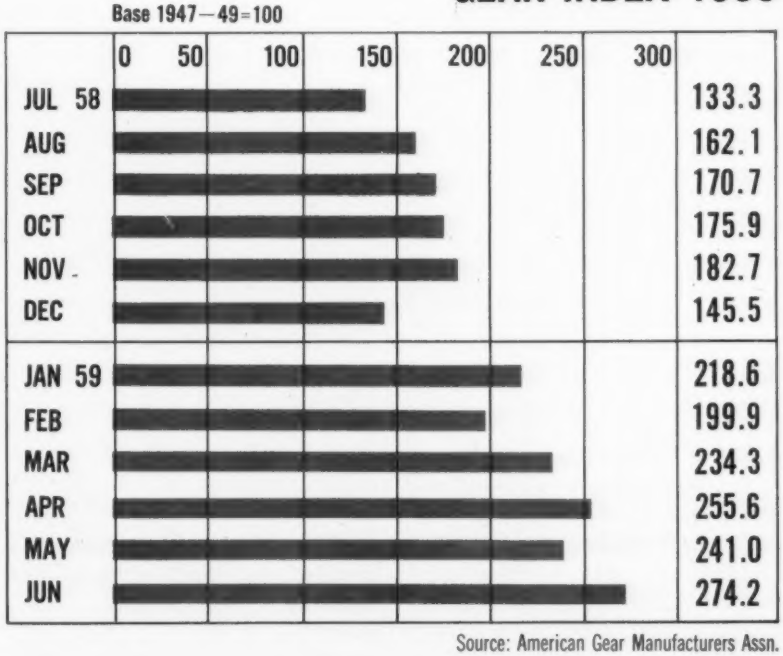
H-W-D sales engineers don't cover specific geographical areas. Instead, they're assigned a number of accounts based on their potential sales volume. An executive committee backs up the field men with detailed help in the form of machine and tooling recommendations, job analyses, work flow charts, plant layouts and the like.

Right on Top—Dynamic selling and practical showmanship certainly seem to have kept H-W-D right on top—possibly ahead of—the current uptrend in machine tool sales.

Mr. Daum reports the company's backlog, as of June 1, was 35 pct over 1958, and that first quarter shipments were 200 pct ahead of the same period last year.

Sales Heading Up — Sales have been climbing steadily since the first of the year, he says, and from all indications the uptrend will continue. He foresees longer delivery periods, also price increases as builders attempt to offset climbing costs of labor and materials.

GEAR INDEX 1959



Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Full Welding Line — Metal & Thermit Corp. (Murex electrodes and CAPS dc-machines) branches out with a full line of welding machines which will be made for M & T by Mid-States Welder and Harnischfeger Corp. Glenn Pacific Power Supply Corp. will continue to make CAPS machines.

Cold Heading Research — Segmented Carbide Die Co., Inc., Detroit, has been formed by Russell, Burdsall & Ward Bolt & Nut Co. The company will engage in research and development of impact tooling for the cold heading industry. At the parent concern die designs have been developed which have cut tooling costs as much as 100 pct.

Meet Bostik 7026—A new adhesive known as Bostik 7026 has been developed by B. B. Chemical Co., Cambridge, Mass. It obtains exceptionally high tensile strength in bonding to metals or glass. The adhesive is effective with ceramics and cured phenolic, urea, and melamine moulded plastics.

First Stage Done—Union Carbide Corp. has completed the first phase of construction on its nuclear labs. This includes the main research lab, a power and utilities building, and an ores and minerals development lab. The research center is located in Sterling Forest near Tuxedo, N. Y.

Metals Seminar — The National Assn. of Waste Material Dealers, Inc., will hold its first Management Development Metal Seminar, Aug. 9-14, Kellogg Center, Michigan State University. The five-day program will offer 17 subjects relating to the secondary metal industries.

Lab at Beloit—Fairbanks, Morse & Co. will establish a central research and development lab in a 20,000 sq ft building at Beloit, Wis. Plans include basic research on electronic weighing and control systems, electromechanical devices and machinery, and pumping systems with their related products. This project is expected to be in operation by Oct. 1.

Reliance in Canada—The Reliance Electric & Engineering Co., Cleveland, has purchased a modern industrial plant in Stratford, Ont. It will be a new subsidiary known as Reliance-Reeves-Master Ltd. The plant will be equipped with facilities for the manufacture of Reliance V-S drives, electronic controls, and Master gearmotors now being built for customers in Canada at the company's plants in Ohio.

Made in Germany — Production Machinery, Inc., a new company which imports West German metalworking machinery and markets it under the PROMA brand name, has been formed. The company maintains a central marketing office in Des Plaines, Ill., and warehouses in Baltimore, Chicago, Los Angeles, and Houston.

Porcelain Enameling—"Improved Processing—Key to Greater Profits" will be the theme of the Porcelain Enamel Institute's 21st Annual Shop Practice Forum to be held at The Ohio State University on Nov. 4-6. The forum has been designed to bring the industry up-to-date on the latest processing methods and techniques in porcelain enameling.

"Nice little sideline you've dreamed up, Smedley, have you bothered to clear it with management?"

For Faster Shipment — Delivery time for General Electric standard fractional hp gear motors has been cut from three weeks to one week with the opening of a new manufacturing facility at Paterson, N. J. The $1¼ million facility will make possible 24-hour emergency shipment of most basic fractional hp gear motor ratings.

Award for Aitchison—Mr. R. B. Aitchison, who developed the Jet-Piercing flame process to obtain a new source of iron ore from hard rock, will receive a John Price Wetherill Medal from The Franklin Institute, Philadelphia. Mr. Aitchison is a consulting engineer for Linde Co. and will be awarded the medal at formal institute ceremonies on Oct. 21.

Sunshine State Plant—Michigan Chemical Corp.'s new magnesium oxide plant at Port St. Joe, Fla., is now in operation. After essential in-process build-up, finished products will reach customers early in October. The plant will provide high-purity chemical and refractory grades of magnesium oxide.

Transfer at Tulsa—Graver Tank & Mfg. Co. has moved its Tulsa offices to larger headquarters. The offices are located at 2570 S. Harvard St., Tulsa 14, Okla. Graver is a division of Union Tank Car Co.

Speakers' Service — The Steel Founders' Society of America has published its 1959-60 Speakers' Directory. It lists 71 speakers on various subjects related to steel castings research, production, control, specifications and application, cross-indexed by companies and subject matter. Copies are available from the Product & Market Development Committee, SFCA, 606 Terminal Tower, Cleveland.

Fifty for Frasse—Peter A. Frasse & Co., Inc., a leading distributor of steel and aluminum, is celebrating its 50th year of service to local industry in both the Philadelphia and Buffalo areas. Today, Frasse maintains five plants along the eastern seaboard meeting steel and aluminum requirements of its customers.

Predictable Performance

...for Greer Steel Company is assured with a

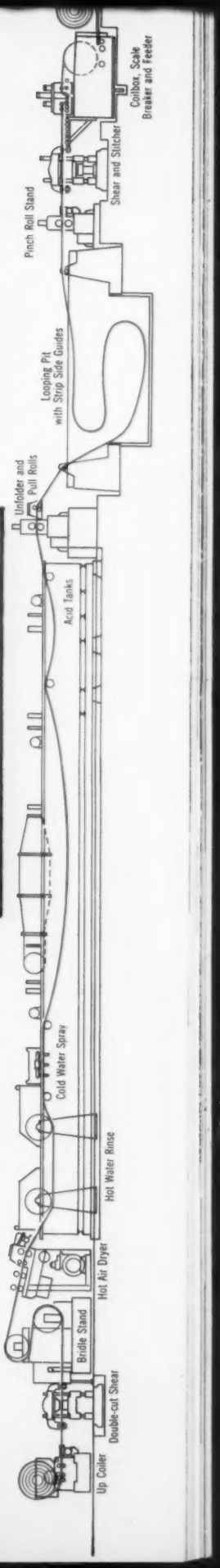
SECO

Pickling Line Installation!

Custom built to meet specific requirements, The Greer Steel Company of Dover, Ohio is experiencing "predictable performance" with their SECO continuous Pickling Line.

Designed to accomodate gauges ranging in thickness from .060 to .1875, coil weight of 10,000 lbs., and a maximum width of 30". Line speed at entry end, 25 to 400 FPM; at exit end, 25 to 200 FPM.

SECO's staff of trained engineers are available for personal assistance. Call us today.



SECO STEEL MILL EQUIPMENT

- Leveling and Shearing Lines
- Combination Edging and Flattening Lines
- Tension Reels for Strip Polishers
- Narrow Strip Grinding Machines
- Slitting Lines
- Multiple Strand Pull-out Rolls and Take-up Frames
- Strip Coilers (Up and Down Type)
- Traverse Reels for Narrow Strip
- Steel Coil Uncoilers
- Scrap Bellers

SECO

STEEL EQUIPMENT COMPANY

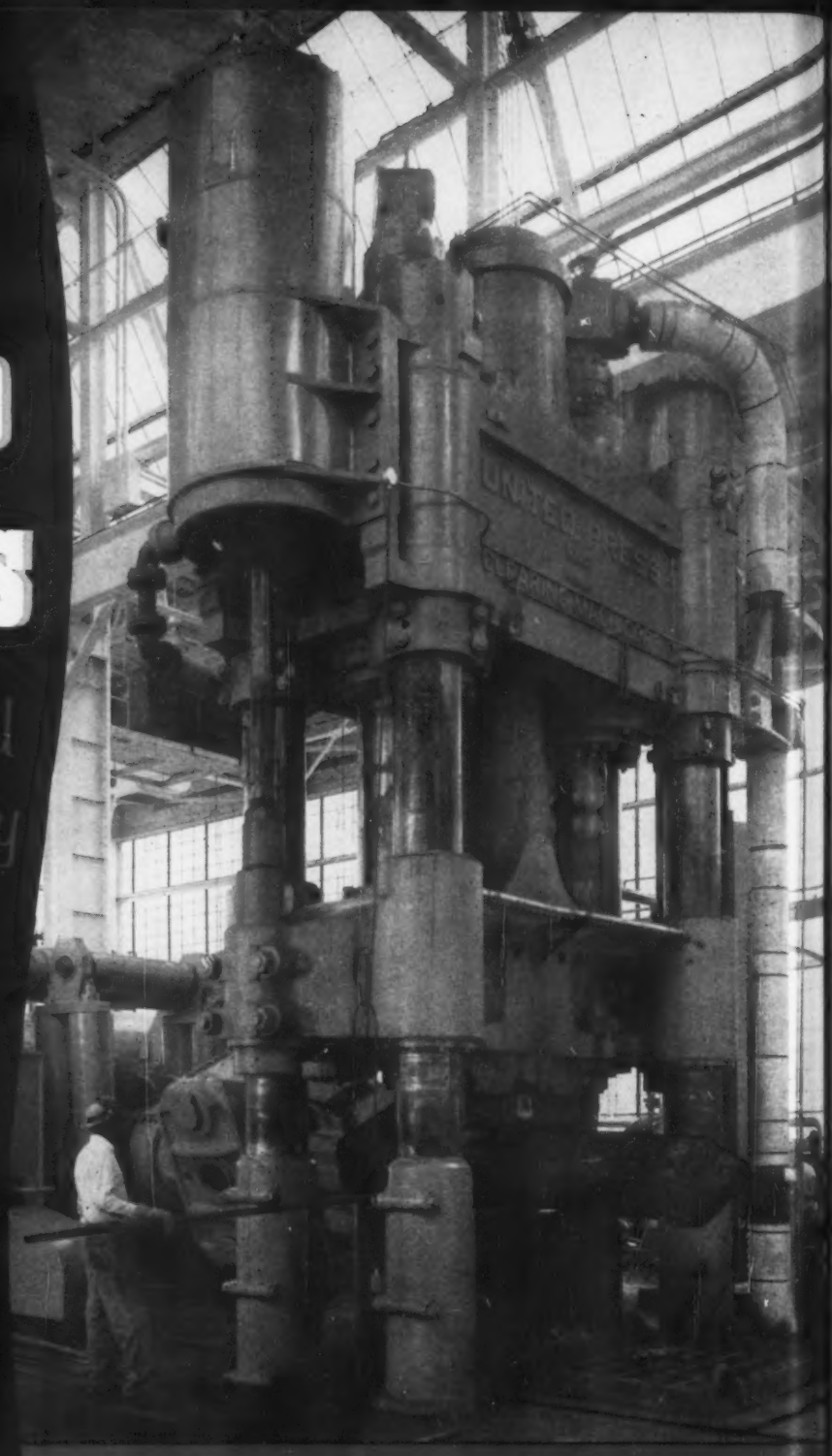
P. O. BOX 737, WARRENSVILLE STATION, CLEVELAND 28, OHIO

Affiliated with Lee Wilson Engineering Co., Inc.

Forging

Ohio Rolls

to shape metal for all Industry



. . . this 2,500 ton forging press, now in operation at the Lima plant, is the latest member of Ohio Steel's family of roll producing equipment.

The giant manipulator, overhead crane and banks of the latest in car type gas fired furnaces complete this new forging facility — A modern facility with which to produce Ohio Forged Steel Rolls.

The Ohio Steel Foundry Co.

LIMA, OHIO ... *Virtually at the center of the steel industry*

PLANTS AT LIMA AND SPRINGFIELD, OHIO

OHIO IRON AND STEEL ROLLS

Carbon Steel Rolls
Ohioloy Rolls
Ohioloy "K" Rolls
Flintuff Rolls
Double-Pour Rolls
Chilled Iron Rolls
Nioloy Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls
Forged Steel Rolls

D. L. Dumond, appointed chief engineer, Machine Tool Div., Clearing Div. of U. S. Industries, Inc.

Hunt Valve Co.—**N. C. Hunt,** named president and chairman of the board; **H. E. Jesko,** named vice president and treasurer; **L. A. Bateman,** named executive vice president; and **A. V. Ney,** promoted to sales manager.

Springfield Boiler Co. — **F. W. Hainer,** named president.

Metals Carbides Corp.—**R. T. Beeghly,** elected president.

Koehring Co., Koehring Div.—**E. T. Goree,** appointed vice president, sales.

Curtiss - Wright Corp., Metals Processing Div.—**P. J. Chaney,** appointed general sales manager, Buffalo, N. Y.

Ajax Magnethermic Corp.—**Manuel Tama,** named vice president, Ajax Engineering Div., Trenton, N. J.; **M. A. Raney,** appointed vice president, Ajax Electrothermic Div., Trenton, N. J.

National Can Corp.—**A. J. Ringman,** appointed asst. vice president and manager, sales, Atlantic Div.

Midwest Aluminum Supply Corp. —**J. W. Walsh,** named vice president.

Acme Industries, Inc.—**W. M. Hassenplug,** promoted to executive vice president.

Chemical Milling International Corp.—**F. L. Bailey,** named president and sales manager; **E. L. Brevik,** named vice president and technical director.

The Yale & Towne Mfg. Co., Lock and Hardware Div.—**C. D. Dougherty,** appointed director, industrial engineering.

Bethlehem Steel Co., Pacific Coast Div.—**J. A. Crooks,** appointed manager, heavy rolled product sales.

Air Reduction Sales Co.—**O. M. Donohue,** named administrative assistant, eastern region, Union, N. J.

Stephen Miller, becomes sales manager, Machine Tool Div., Clearing Div. of U. S. Industries, Inc.

Firth Sterling Inc.—**Dr. C. H. Toensing,** appointed manager, powder metals research.

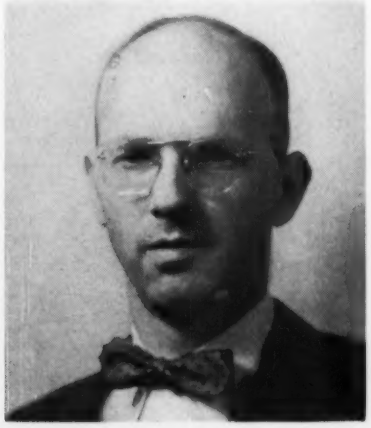
H. K. Porter Co., Inc., Cleveland Forge Works Div.—**T. W. Howlett,** appointed works manager.

Allis-Chalmers Mfg. Co.—**G. A. Saar,** appointed asst. to vice president, Industries Group.

The Fafnir Bearing Co., Product Engineering and Metallurgical Divisions—**H. B. Van Doren,** appointed director, engineering; **H. L.**

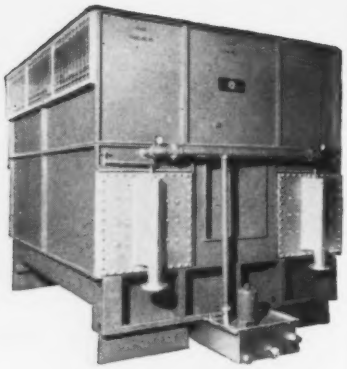
(Continued on P. 100

R. A. Wilson, elected vice president, The Lincoln Electric Co., Cleveland.



G. F. Willis, elected vice president, The Lincoln Electric Co., Cleveland.

E. M. Miller, elected vice president, The Lincoln Electric Co., Cleveland.



Is your plant CRITICALLY SHORT of WATER?

You will make major water savings, reduce your costs, solve your problems of water supply or disposal and get HIGH OPERATIONAL EFFICIENCY with Niagara "Aero" Evaporative Heat Exchangers, After Coolers or Condensers for these important plant services or processes:

- AFTER COOLING and air drying for large air and gas compressors and AIR LIQUEFACTION
- COOLING ENGINES, COMPRESSORS, HYDRAULIC PRESSES
- COOLING QUENCH BATHS, FURNACES, INERT ATMOSPHERES
- COOLING ROLLS, WELDERS, DRAWING OR EXTRUSION DIES
- PRODUCT AND PROCESS COOLING CHEMICALS OR INTERMEDIATES
- COOLING LIQUIDS OR GASES IN CLOSED SYSTEMS
- VAPOR CONDENSING UNDER VACUUM
- ELECTRONIC PROCESS COOLING

High operational efficiency means: precise temperature for improved product and process quality control, heat removal at rate of input, simple operating conditions, real economy in upkeep, sustained full capacity.

Also it means cooling in a closed system with your product kept free from contamination or, when condensing, getting a pure condensate holding high quality in your product or material.

Niagara machines do the work of a cooling tower plus shell-and-tube coolers with a single machine that saves piping, water handling disposal and treatment expense and 95% of water consumed by contact cooling methods.

Write for Bulletin 129, 130, 132, 136R.

NIAGARA BLOWER COMPANY

Over 35 years of Service in Industrial Air Engineering

Dept. IA-7, 405 Lexington Avenue
NEW YORK 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada

(Continued from P. 99)

Potter, named asst. director, engineering; **F. G. Patterson,** appointed chief product engineer; **A. B. Jones, Jr.,** named chief research engineer; **Henry Hubbell,** named technical development manager and **P. K. Pearson, Jr.,** appointed chief plant metallurgist.

G. L. Holt, appointed vice president, manufacturing, American Car and Foundry Div., ACF Industries, Inc.

Edgewater Steel Co. — **R. L. Thompson, III,** named manager, transportation.

The Cooper - Bessemer Corp.— **R. W. P. Johnson,** appointed New York district manager.

Union Twist Drill Co.—**E. M. Burt,** appointed Northeastern district sales manager.

Jonathan Prichard, named manager, Philadelphia district sales office, Wheeling Steel Corp.

R. H. Martin, appointed manager, Tubular Products, Jones & Laughlin Steel Corp.

General Electric Co. — **H. H. Jason,** appointed manager, Atlantic district, Metallurgical Products Dept.

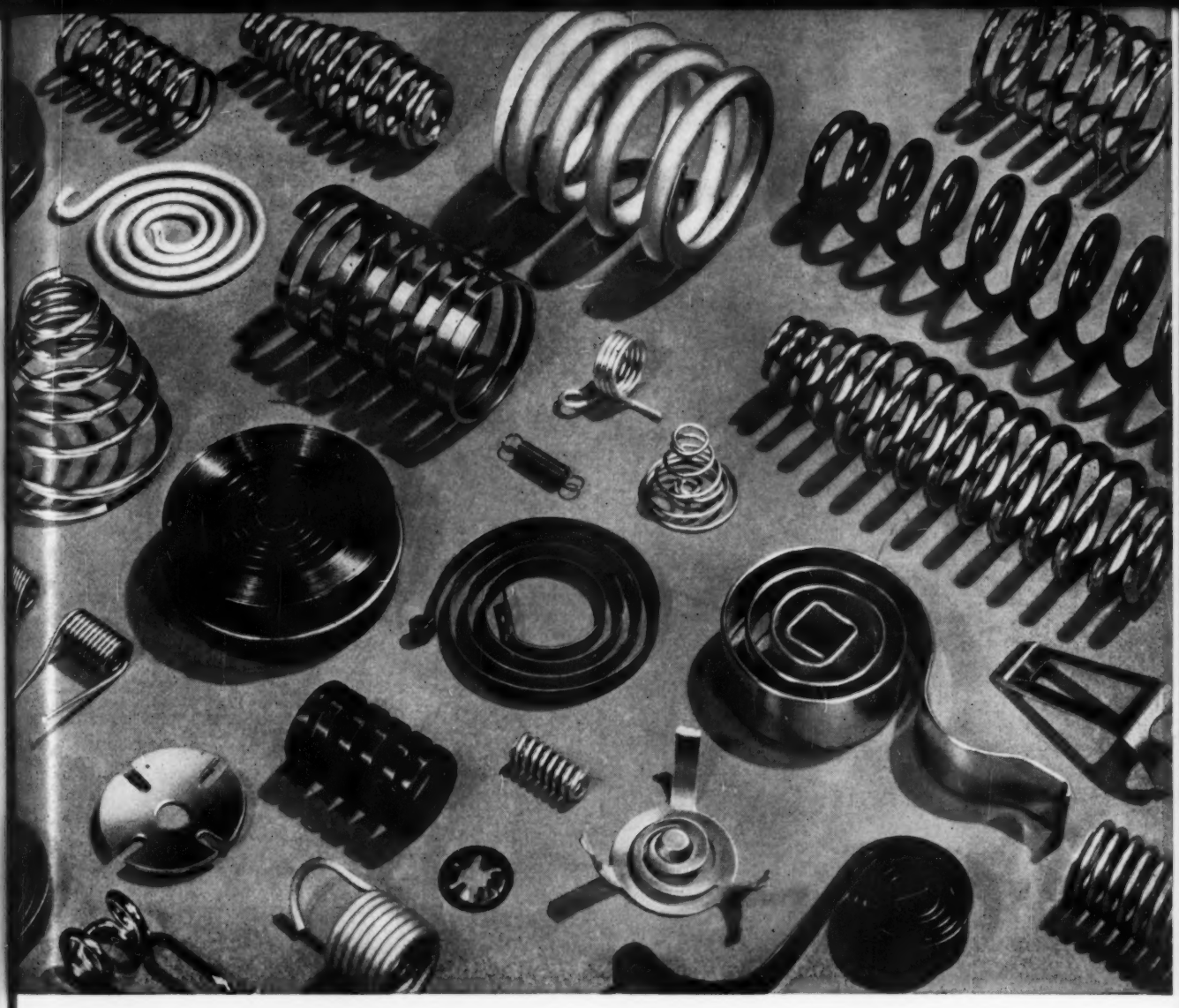
American Chain & Cable Co., Inc., ACCO Power Products Div. —**C. A. Shera,** appointed sales manager.

Armco Drainage & Metal Products, Inc.—**W. E. Harrison,** becomes asst. manager, Washington, D. C., office.

E. A. Booth, appointed asst. general manager, sales, Jones & Laughlin Steel Corp.

Bucyrus-Erie Co., International Div.—**R. T. Craig,** named general sales manager; **J. A. Rossi,** named manager, sales—commercial cranes and excavators, and **W. F. Har-**

(Continued on P. 102)



Which of these did you use today?

Alarm wake you this morning? Stove timer work all right? Did you drive to work . . . take a business trip by air . . . press a light switch . . . use a dictating machine . . . or home workshop motor? Then you, or someone in your home or business, used a spring. With a product-mix like this it's practically certain that we enter your daily living, tucked anonymously away in nationally known and respected brands of all sorts of articles.

Write for a copy of "How to Solve Your Spring Design Problems" to learn how early consultation with the spring manufacturer results in improved design and performance.

Associated Spring Corporation

General Offices: Bristol, Connecticut

Wallace Barnes Division, Bristol, Conn. and Syracuse, N. Y.
B-G-R Division, Plymouth and Ann Arbor, Mich.
Seaboard Pacific Division, Gardena, Calif.
Cleveland Sales Office, Cleveland, Ohio
Raymond Manufacturing Division, Corry, Penna.
Ohio Division, Dayton, Ohio
F. N. Manross and Sons Division, Bristol, Conn.
San Francisco Sales Office, Saratoga, Calif.
William D. Gibson Division, Chicago 14, Ill.
Milwaukee Division, Milwaukee, Wis.
Dunbar Brothers Division, Bristol, Conn.
Wallace Barnes Steel Division, Bristol, Conn.

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

1956 ● 1956 ASSOCIATED SPRING CORPORATION

(Continued from P. 100)

court-Palmer, named manager, sales, large machines.

International Business Machines Corp.—**R. W. Brown,** appointed director, stockholder relations.

Buhr Machine Tool Co.—**C. S. Johns,** promoted to general sales manager.

Wheelabrator Corp., Techline Div.—**R. D. Taylor,** appointed regional manager, Eastern Div.

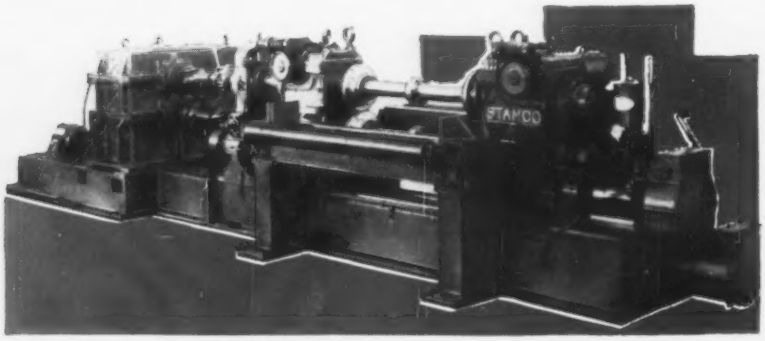
A-S-R Products Corp.—**H. A. Beiseigel,** named purchasing agent, Staunton, Va., plant.

Minneapolis-Moline Co., Marketing Div.—**A. E. Smith,** promoted to merchandising manager.

I-T-E Circuit Breaker Co.—**J. J. Sedlacek,** named manager, Philadelphia district sales office.

U. S. Steel Corp., American Bridge Div.—**G. B. Willard,** appointed district engineer.

Top efficiency and versatility at low cost with Stamco side trimmer



A wide range of equipment is available for warehouse and mill duty on ferrous or non-ferrous materials. Stamco can solve your particular problem—economically.

Contact us today. No obligation.

Stamco, Inc.
New Bremen, Ohio, U. S. A.

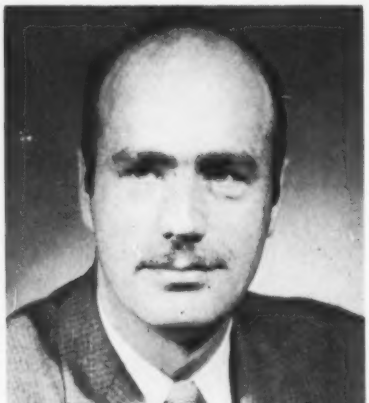
Slitting and Coiling Lines • Cut-To-Length Lines • Flying Shear Lines • Power Squaring Shears • Automatic Resquaring • Corrugating, Culvert and Steel Mill Equipment

A. O. Smith International S. A.—**J. J. Gibbons,** appointed director, marketing; **Sidney McNiece,** named asst. to the president; and **C. H. Jewson,** named resident manager, Caracas, Venezuela, office.

The Thew Shovel Co.—**R. T. Maynard,** appointed contract sales manager.

F. E. Whyte, appointed director, purchasing, SKF Industries, Inc.

Basic Products Corp. of Milwaukee—**H. E. Koch,** elected executive vice president.

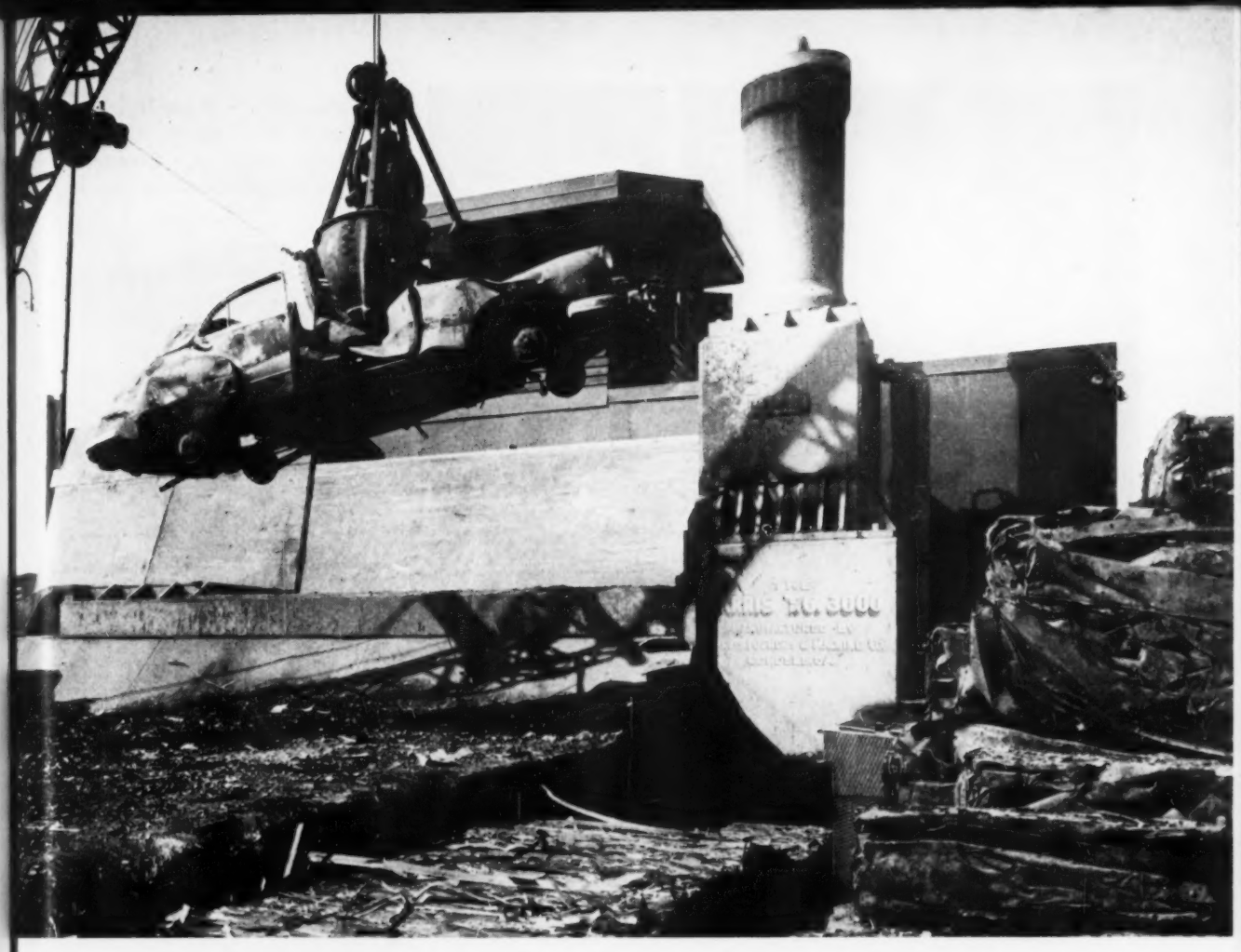


E. S. Evans, appointed asst. chief engineer, Steam Turbine Dept., Allis-Chalmers Mfg. Co.

Dravo Corp.—**W. W. Timmis, Jr.,** appointed manager, grating sales, Pittsburgh.

Koppers Co., Inc., Metal Products Div.—**J. P. Haas,** appointed manager, research and development,

(Continued on P. 104)

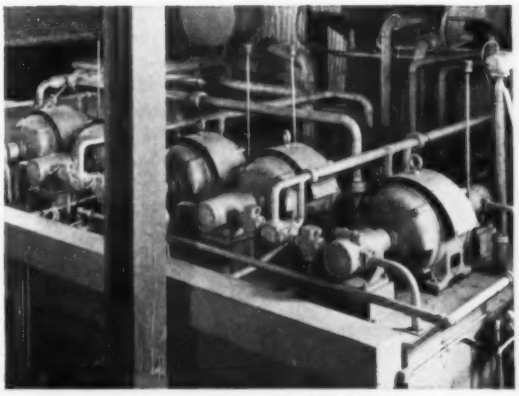


Smashing ¾ ton autos into 5 ft. bales

In a scrap salvage yard in Chicago, this huge press smashes automobiles into five-foot bales. Here's how it works. Stripped autos are shoved into a 20-foot press box. At the flip of a switch three giant plungers jam down with a force of over 1000 tons. Result: A compact bale, five feet long and two feet deep. About 30 cars an hour are run through this giant baling press.

Powering this mammoth machine requires sturdy motors. They have to deliver an instantaneous surge of power to drive home the huge plungers. Five Century Electric 100 hp motors do the job. Result: Plenty of dependable power when and where it's needed.

Century Electric application engineers have helped develop thousands of motor drive systems like this. And they can design the right drive system for your equipment because Century Electric designs, manufactures and applies motors and nothing but motors . . . your assurance of getting *more* than just a motor.



Five 100 hp Century Electric motors provide dependable muscle power for the huge press.

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri *Offices and Stock Points in Principal Cities*

Century

59-9

(Continued from P. 102)

Baltimore, Md.; **G. V. Middaugh,** appointed manager, Contracting Dept. of the Division.

R. F. Armitage, named senior asst. district manager, Warren district, Republic Steel Corp.

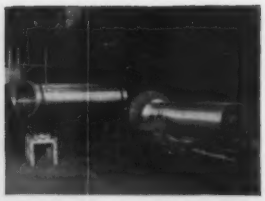
W. R. Butler, appointed manager, castings sales, Aluminum Co. of America, Pittsburgh.

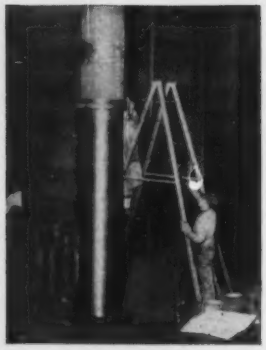
The Babcock & Wilcox Co., Tubular Products Div.—**G. W. Kross, Jr.,** promoted to asst. manager, tubing operations, Beaver Falls, Pa., plant.

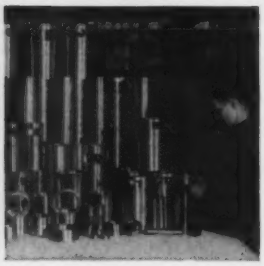
Kaiser Aluminum & Chemical Sales, Inc.—**R. L. Knipe,** appointed asst. manager, Los Angeles sales district.

OBITUARIES

Erwin Loewy, founder and head of Loewy-Hydropress Div. and a vice president of its parent company, the Baldwin-Lima-Hamilton Corp.







You save 5 ways with

SHENANGO CENTRIFUGAL CASTINGS

By using Shenango centrifugal castings for essentially symmetrical parts, you will gain considerable savings because:

1. **The Shenango process automatically eliminates hidden defects in the metal . . . insures fewer rejects.**
2. **No patterns required . . . an important saving, particularly on special or small quantity runs.**
3. **Finer, more uniform grain structure means smoother, faster machining, better control, and a higher rate of completion.**
4. **With Shenango centrifugal method control, there's less excess metal to be machined away, less metal to buy and ship!**
5. **Because of their homogeneous, pressure-dense qualities, Shenango centrifugal castings are stronger, have better wear resistance and require less frequent replacement. Maintenance cost is cut!**

Check with Shenango on centrifugally cast parts for your needs —large or small castings . . . rough, semi-finished or precision-machined . . . ferrous or non-ferrous. They'll cost you less in the long run. For bulletins, write to: *Centrifugally Cast Products Division,* The Shenango Furnace Company, Dover, Ohio.

SHENANGO CENTRIFUGAL CASTINGS

COPPER, TIN, LEAD, ZINC BRONZES • ALUMINUM AND MANGANESE BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL • ALLOY IRONS

PRODUCTION WISE and COST CONSCIOUS!

Borg-Warner quality assures you of top value in every capacity, performance and price range

$4900.00

For a 5-Ton, 22 Ft. Span, Top Running Single Girder Motor Driven Crane complete with a 2-motor heavy duty double reeved hoist.

PRODUCTION WISE

There's no room in this busy shop area for aisle-filling floor-type handling equipment. But, an economical Borg-Warner 5-Ton Crane System transports materials and work swiftly, smoothly and quietly with minimum interference to production.

COST CONSCIOUS

Borg-Warner engineers and production men have made extensive use of interchangeable, standardized components resulting in real savings for you. You get more crane, more performance and greater dependability, for a smaller investment.

If you are planning on expansion or modernization, it will pay you to find out how Borg-Warner Industrial Cranes can supply you with the best values in overhead materials handling equipment.

DEPENDABLE QUALITY

- Full 5-ton rating with ample reserve capacity.
- Heavy duty Borg-Warner Motor Reducer Bridge Drive with integral fluid coupling.
- Heavy duty double reeved close headroom hoist.
- Heavy duty forged steel wheels.
- All welded, jig assembled, jig bored end trucks.
- Long life precision ball and roller bearings.
- Precision assembly of girder and end trucks with fitted bolts in reamed holes.
- Outrigger machinery girder construction.
- Full magnetic push button control.

ADVANCED DESIGN

The N-TRMD illustrated is a typical Borg-Warner Industrial Cranes Top Running Single Girder Motor Driven Crane. The precise equipment to meet your specific needs is available. Consult with Borg-Warner Industrial Cranes engineers.

Industrial CRANES

B-W BORG WARNER

Design it better ... Make it better.

Find Your Nearest Distributor Under CRANES In The Yellow Pages

Distributors in all principal industrial cities.

Borg-Warner® INDUSTRIAL CRANES

1510 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

REPUBLIC "50" HIGH STRENGTH STEEL PALLETS

withstand temperatures over 900° at Anaconda Aluminum Company

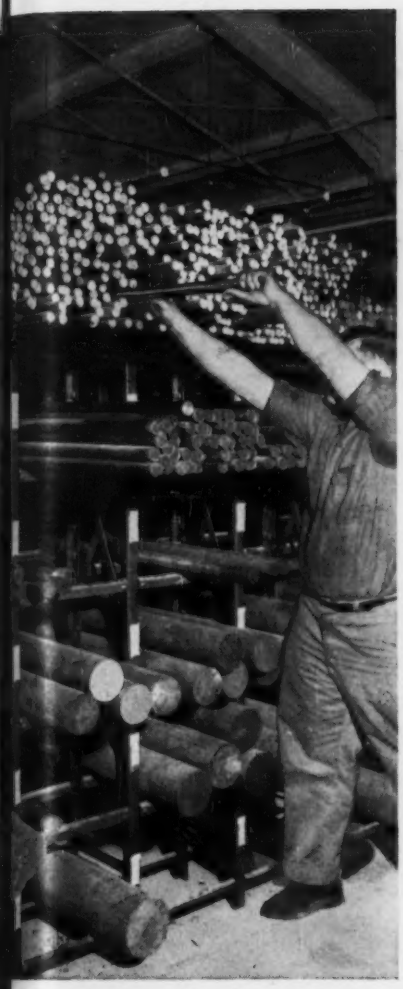
Republic "50" High Strength Steel Pallets solved a particularly severe problem at the Anaconda Aluminum Company, Louisville, Kentucky, world's largest independent producer of aluminum foil.

Twelve-hour annealing cycles of aluminum coils at temperatures over 900° F. caused rapid deformation of the ordinary steel pallets previously used. This deformation damaged the edges of the aluminum coils, resulting in a serious reduction of foil yield. And because deformation of the pallets limited the height to which coils could be stacked, a storage problem was created.

The Republic "50" High Strength Steel Pallets have now been in service for over two years with no sign of deformation. Conservative estimates place the life of the new Republic "50's" at ten years—five times that of previous pallets, with no damage to coils, no lost production time, no wasted materials.

The low alloy steel used in producing Republic "50's" has a minimum yield point of 50,000 psi and a minimum tensile strength of 70,000 psi. It is the combination of basic alloy steel and Republic's extensive heat treating experience that gives these pallets the extreme strength needed for the job.

Let the materials handling engineers of Republic's Berger Division work with you in solving your materials handling problems. Call your Republic representative or write direct.



REPUBLIC WEDGE-LOCK® PARTS STORAGE UNITS are easy to load or unload from either side. And, the heavier the load, the tighter the grip, because patented Wedge-Lock construction includes a post that will not buckle; a concealed sway-proof joint; and a reinforced shelf that does not sag. Unlimited shelf arrangements. World's strongest. Capable of exceptionally high stacking. Republic Storage Engineering specialists will help you plan. For complete details mail coupon.

REPUBLIC PB-127 COLLAPSIBLE BOXES lower the cost of storage or shipment of empty stacking boxes. Heavy-duty corrugated design delivers long, efficient service at lowest per-year cost. Boxes can be tiered when loaded or empty, collapsed or set up. All parts permanently attached. Ideally suited to shipping castings and other heavy items, the PB-127 Box offers up to 66% savings in storage space. Send coupon for complete information.

NEW REPUBLIC DRUM RACKS assure stacking of more in-use drums in less space and at lower cost than ever before. Each rack supports two loaded 55-gallon drums. Racks with drums can be stacked to any practical height. Standard fork-lift trucks can pick, move, and stack as many tiers of drums at one time as capacity permits. Shipped knocked down, with fasteners for quick and easy assembly. Send coupon for details.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA -7596
1441 REPUBLIC BLDG. • CLEVELAND 1, OHIO

☐ Have a Materials Handling Engineer call
Please send more information on the following:
☐ Republic High Strength Materials Handling Equipment
☐ Portable Drum Racks
☐ PB-127 Collapsible Boxes
☐ Wedge-Lock Parts Storage Units

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State____

SPS RELIABILITY / *A dynamic standard of predictable performance*

SPS Nuclear Division inspector in foreground verifies 12 in. OD of reactor vessel core access housing. Tolerance: ±.001 inch. Precision granite surface plate assures absolutely level test bed, eliminates slightest distortion of jigs. Typical reactor vessel closure head incorporates some 50 of these large precision-machined housings—for control rods, instrument packages and access.

No random sampling here . . .

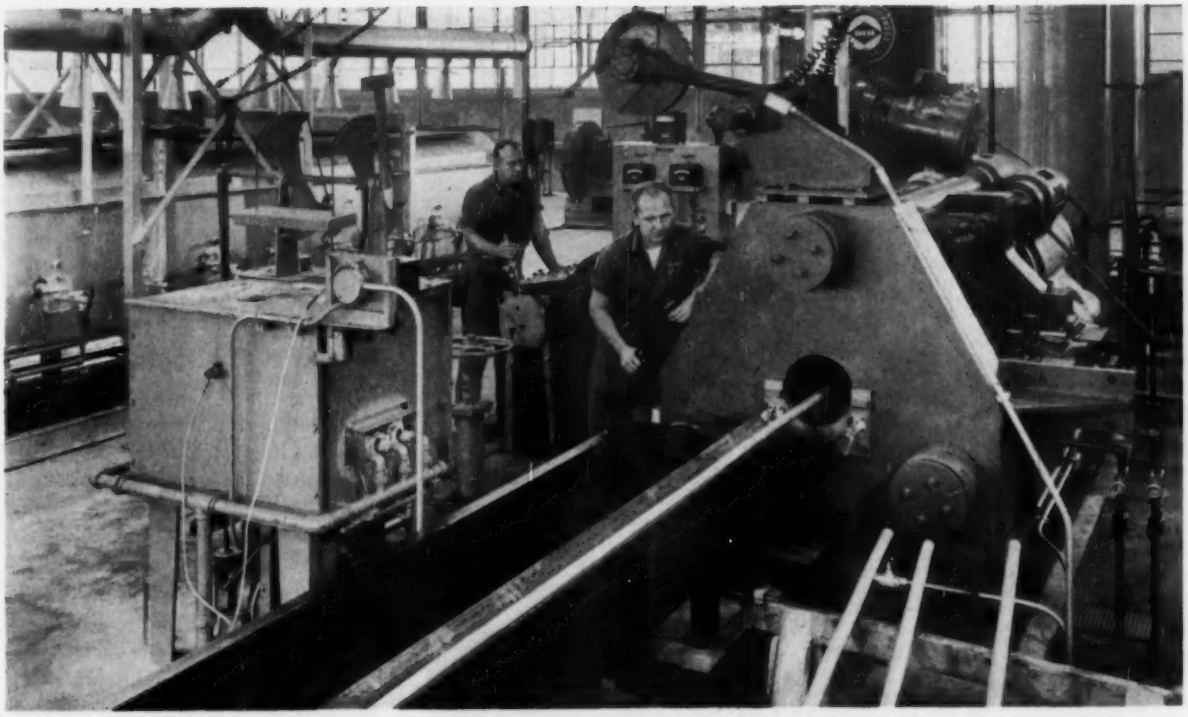
Parts reaching this final inspection area at the SPS Nuclear Components Division are already documented by detailed records of their dimensions. Presumably they are perfect. Yet to be certain, the records are put aside and every dimension of every part is checked and recorded again—and then cross-checked against the original figures. With a part such as the large core access housing in the foreground, this involves over 200 measurements, many to ±.0005 inch.

To make these checks, SPS technicians draw on more than $3 million worth of precision gaging, including the very latest air and electronic equipment. Most of this is of the comparator type, designed to eliminate possible misreadings, which sometimes occur with vernier scales.

Why this emphasis on perfection? Simply because these parts must function with 100% reliability in locations that are often made inaccessible by radiation. If you have requirements for such components (for reactors or for conventional power-producing machinery), contact SPS—manufacturer of precision threaded fasteners and allied products in many metals, including titanium. Request new Folder 2499.

NUCLEAR COMPONENTS Division SPS

JENKINTOWN 17, PENNSYLVANIA



EQUIP FOR VARIETY: This 700-ton extrusion press has the flexibility to handle variety of special metals.

Make Exotic Metals Practical

Special Equipment Can Iron Out Production Snags

By **J. S. Rodgers and E. A. Wright**—New Products Div., Wolverine Tube Div., Calumet & Hecla, Inc., Allen Park, Mich.

Tomorrow's metals are being worked today to meet the challenges already facing designers.

The key to "practical availability" is getting consistent quality and adequate volume with equipment designed to handle a variety of materials.

▪ Technological progress in this country points up the unfilled need for fabricated parts made of metals and alloys with properties surpassing those of common metals. More and more industries require the use of metals with high strength at elevated temperatures, high corrosion resistance, high strength-to-weight ratios, or low neutron absorption cross section.

The pressure is on the metalworking industry to provide an adequate supply of the parts and materials needed. On the other hand, to make a reasonable return on its investment for production facilities, metalworking management must be fully familiar with the scope of the problem.

Experience Counts—A major reason for many disappointments met in introducing new metals is a failure to recognize the difficulties in each phase of handling from ore to fabricated product. All too often important data was obtained by extrapolation rather than by experiments.

When it became evident that rapid strides in research and development were outstepping conventional metals and alloys, metallurgists went to the periodic table of the elements. The following "exotic" metals held promise of new levels of performance: beryllium, columbium, hafnium, molybdenum, rhenium, tantalum, titanium, tung-

sten, vanadium, yttrium, and zirconium.

As physical properties of these metals vary, so does their practical availability in the form of rod, tubing, extruded shapes, and fabricated parts.

Are They Ready? — Some can still be considered as being laboratory materials. Others are ready to take their place as materials of construction along with conventional metals.

The key expression here is "practical availability." To both supplier and potential user it means assurance of being supplied with the needed part on a consistent basis in terms of both quality and quantity.

A designer must be careful not to rely solely on catalogs and handbooks. Practical availability can only stem from production capability in terms of competent personnel, suitable equipment, and extensive experience.

VACUUM ANNEAL: It's a critical step in getting ductility in special metals. Setup removes danger of contamination in anneal between draws.

FOR STRAIGHTENING: Full-size unit points up the proper method of straightening tube of particular special metal.

A Question of Volume—Production of a few satisfactory pieces of a particular dimension is not enough to be sure that a company can be a volume producer of a quality product. Designers, once burnt by inability of a supplier to supply, will shy away from newer materials.

Far more progress has been made in extracting and refining the newer metals than in developing economical techniques for their fabrication. It's because the proper conditions for successful fabrication cannot be predicted from theory and laboratory work alone.

It's quite possible to fabricate a high-quality piece one time and, under seemingly identical operating conditions, to ruin the tooling next time around. Only after trial and error, and painstaking control and recording of conditions, is it possible to establish production cycles that will yield consistent quality and adequate volume.

Problems in Common—The special metals have many problems in common. They generally require cladding to prevent contamination during extrusion.

They frequently have to be vacuum annealed. Difficulties arise when vacuum annealing takes place at high temperatures. The furnace wall can collapse or materials can vaporize and plate out.

From a cost point of view, there are two key problems: developing better lubricants for extrusion and drawing, and improvement of overall metal yield. The latter refers to

the pounds of acceptable product obtained per pound of starting material. In many cases, minor changes in handling or operations can avoid losses of costly material.

To solve developmental problems, the all too common approach is to utilize plant people and plant equipment. This means working materials on production facilities designed for other uses.

Can Fall Short — Special-metal pilot production can run into serious difficulties in meeting deliveries and in maintaining quality with such equipment. Further, it takes experience to learn enough about the problems of handling these metals.

While most special metals have not reached tonnage production, they have outgrown the laboratory stage. To tap the large market potential, production costs must be brought down by completing development work and establishing production techniques.

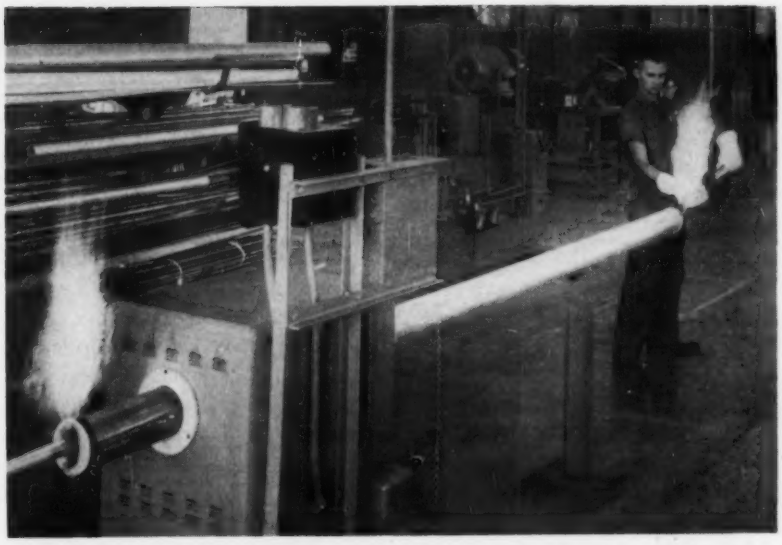
It can only be done with production-scale equipment. A special metals facility must be, in effect, a cross between a laboratory pilot plant and a production mill.

Demands on Operators—Production workers for an exotic metal facility must be of high caliber. The fact is they function as technicians.

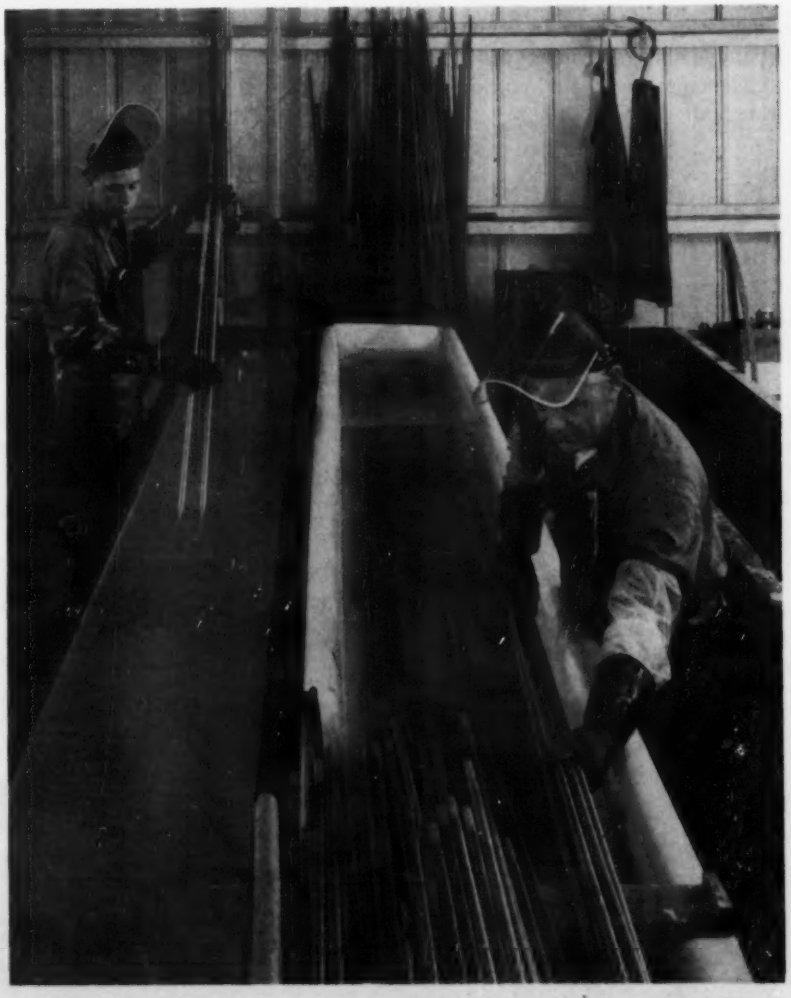
Production techniques are more complex and variations in procedures are far more critical than for conventional materials. Equipment operators must use far more judgment and must make more important decisions than in a conventional facility.

Pointing up the importance of development of special metals is Wolverine Tube's 25,000 sq ft of floor space devoted to research and development. It's a full-scale setup with thorough instrumentation and flexibility.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



ANNEALING SHORTCUT: For special tests, short length of tube passes through furnace. Suitable gas prevents contamination by blanketing work.



NEED FOR PICKLING: To remove thin layers of cladding material used in extrusion, parts are passed through pickling and degreasing facilities.

New System Speeds Inspection Of Bevel Gear Blanks

By omitting the crown of a bevel gear blank as reference point, this new system of inspection tolerances proves to be fast and highly accurate.

▪ A new system of tolerances for inspecting bevel gear blanks is paying off handsomely for Bell Helicopter Corp., Fort Worth, Tex.

The system, which goes hand-in-hand with a new type of inspection machine, is used to check all of the company's bevel gear blanks, ranging from 2 to 15 in. in diam. Company officials credit it with many advantages over the conventional method.

Where's the Crown? — In the usual manner of designating bevel gear tolerances, the gear crown (outside diameters) is a critical locating surface. This is fine when a gear design is put on paper. But when a radius is turned on the crown early in the gear making process, this basic reference point is lost. Inspectors must then guess at the location of the imaginary crown point.

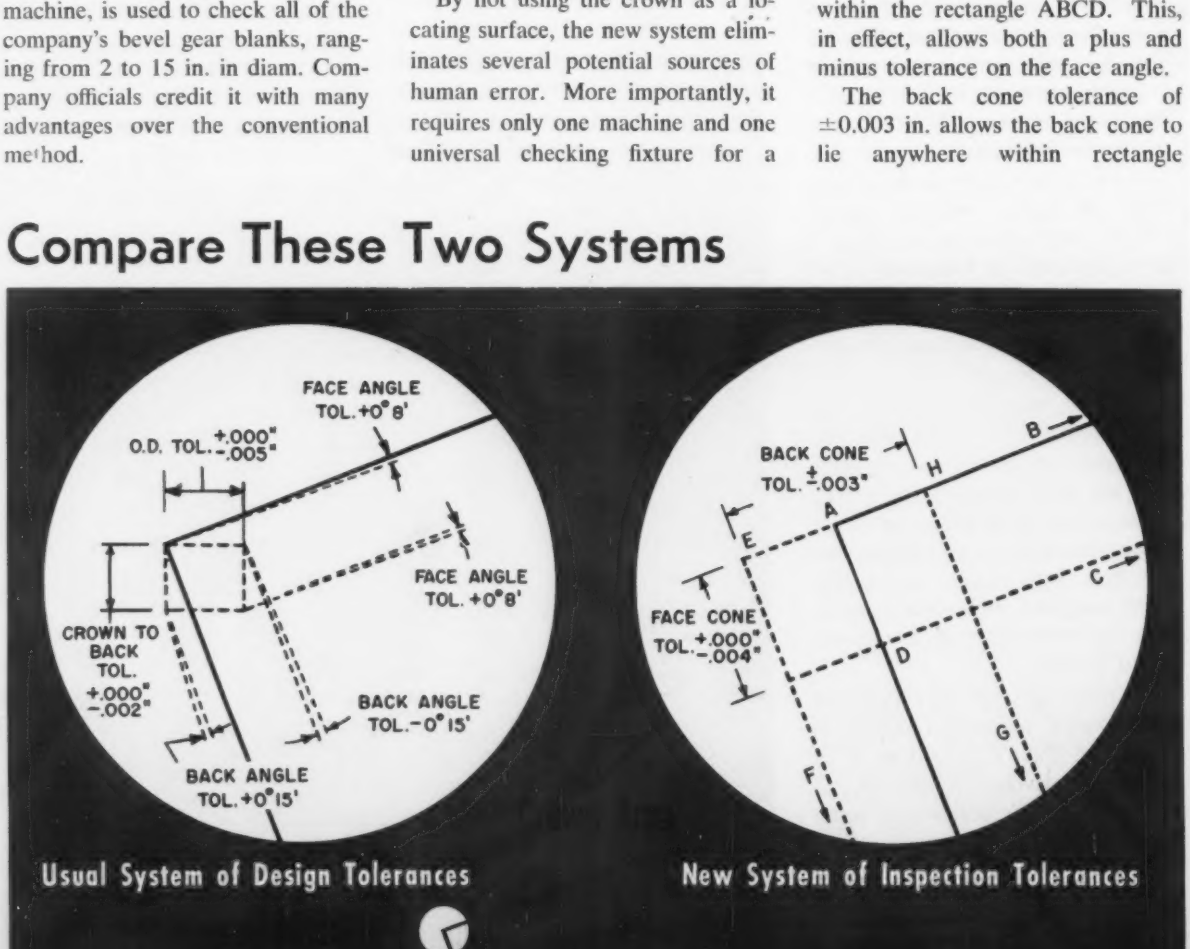
By not using the crown as a locating surface, the new system eliminates several potential sources of human error. More importantly, it requires only one machine and one universal checking fixture for a quick, accurate inspection of any blank.

Two Simple Angles — The accompanying drawing compares conventional design tolerances with the new system of inspection tolerances. The latter gives equivalent allowances but deals only with face angle and back angle.

For example, the face cone tolerance of +0.000 to —0.004 in. allows the face cone to lie anywhere within the rectangle ABCD. This, in effect, allows both a plus and minus tolerance on the face angle.

The back cone tolerance of ±0.003 in. allows the back cone to lie anywhere within rectangle

Compare These Two Systems



EFGH. This is equivalent to a tolerance of approximately ±0.006 in. on the OD of a flat gear.

These cone tolerances are easy to measure and are entirely consistent with design tolerances and good running quality.

Benefits Explained — Just how does this new technique pay off? James M. Dowell, Bell's assistant machine shop superintendent, says, "Blank production has increased 50 pct. The system also eliminates discrepancies between the readings taken by inspectors and machine operators. Gear angles and concentricity can now be checked without using a layout table."

The machine that applies this new method is a No. 15 Bevel Gear Blank Checker, designed and built by the Gleason Works, Rochester, N. Y. With it, Bell inspectors spot gear blank inaccuracies early in the production cycle.

This means that errors can be corrected before time and money are lost on subsequent operations, or on costly disassembly of finished components. Simple controls make the machine easy to operate, and operators can be trained quickly.

No Special Fixtures — The machine also eliminates the cost of designing and building special checking fixtures for each job. It uses the same arbor equipment as Bell's gear cutting machinery.

A typical bevel gear blank is checked by first mounting it on an arbor on the work spindle table. The measuring head has a vertical adjustment with a double dial for setting the crown - to - back dimensions. The work spindle table has a horizontal adjustment and a double dial for setting the outside diameter.

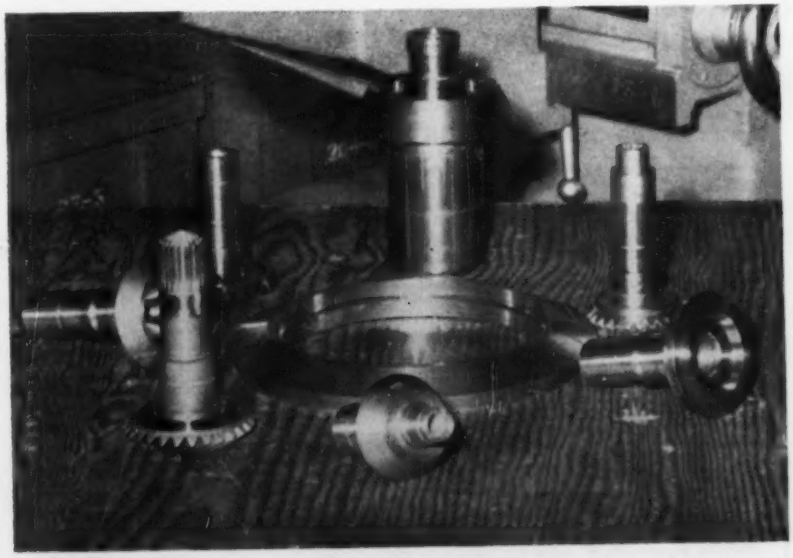
As the accompanying photos show, the machine has a dial indicator mounted on an adjustable, angular slide. This slide is set to the face angle (or back angle) and the blank is trammed with the indicator.

How Errors Register—Since the indicator slides parallel to the face cone (or back cone), a perfect blank will register zero on the indicator in all positions. If readings vary as the indicator trams the cone, a face angle error is indicated. If the indicator reading is constant but not zero, the face angle is correct but the crown-to-back dimension is in error.

Back angles are checked in the same way. A variation in indicator reading shows an angle error, and a constant indicator reading (but not zero) shows an error in outside diameter.

A handwheel permits checking the blank for concentricity while it is rotated. The machine can easily be set to read either axial or radial runout.

QUICK WORK: Inspector O. H. Hight (left) quickly trams a bevel gear blank for J. M. Dowell, Bell's assistant machine shop superintendent.



UNIVERSAL: Using the new system of tolerances, Bell needs only one fixture on the No. 15 Gleason checker to inspect the blanks shown.

Do Your Foremen Have Time To Direct Their Men?

By J. R. Kennedy—Staff Engineer, John A. Patton Management Engineers, Inc., Chicago

Surveys show that little more than half a foreman's time is spent in direct supervision of his department.

Here are some pointers on putting your front-line management back at the helm.

▪ Wage incentive programs are dying at an alarming rate in industry today. Most plans are obsolete within five years after they have been installed.

So voracious is the appetite of runaway incentives that one Mid-Western company grossing $80 million was able to squeeze $1 million out of direct labor costs alone in the first year of revision.

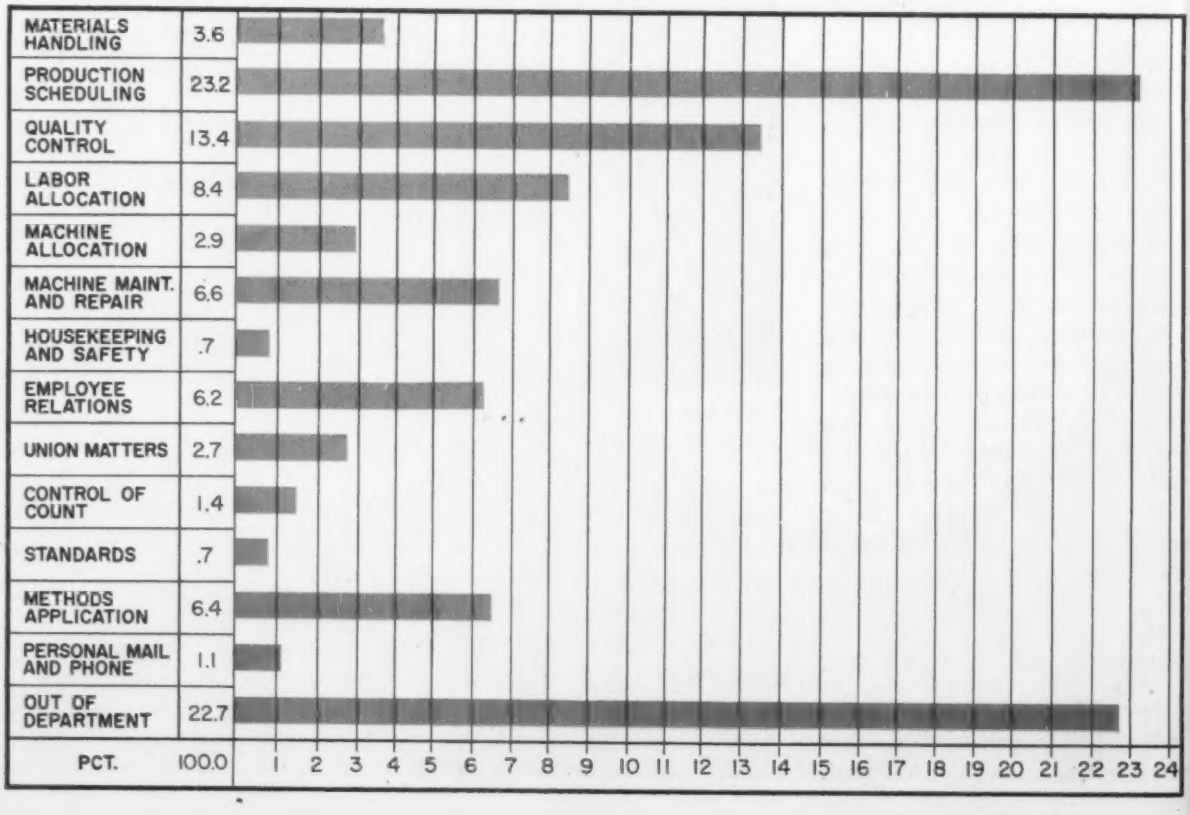
One of the main causes of obsolescence is the lack of proper maintenance by front-line supervision. To find the reason for this, the John A. Patton firm studied foreman workloads in three companies in which wage incentive plans were being revised.

Over a period of two man-weeks, 693 observations were made in each company. These observations were made at pre-determined times; but every foreman—without prior awareness—was observed at different times each day.

Away from Real Job—A composite of foreman workload in the three companies (2079 observations) showed that 23.2 pct of the

Breakdown of Foreman Workload

2079 Observations Point up Burden of Extra Duties


MATERIALS HANDLING 3.6
PRODUCTION SCHEDULING 23.2
QUALITY CONTROL 13.4
LABOR ALLOCATION 8.4
MACHINE ALLOCATION 2.9
MACHINE MAINT. AND REPAIR 6.6
HOUSEKEEPING AND SAFETY .7
EMPLOYEE RELATIONS 6.2
UNION MATTERS 2.7
CONTROL OF COUNT 1.4
STANDARDS .7
METHODS APPLICATION 6.4
PERSONAL MAIL AND PHONE 1.1
OUT OF DEPARTMENT 22.7
PCT. 100.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

foreman's time was eaten up by production scheduling. And, for an average of 22.7 pct of the day, the foreman was out of his department.

In other words, almost half of the foreman's time each day is spent away from direct supervision of his department.

Further analysis of the production scheduling factor indicated that 27.4 pct of it was paperwork, 31.7 pct was investigating the schedule, and 11.2 pct of the total was spent in meetings discussing production control.

Loses the Reins—The "out of department" factor was more difficult to analyze; many times the reason for absence couldn't be readily found. But most of the data showed that the foreman was acting as his own coordinator and expeditor. Even materials handling meant his actually moving skids of work.

No wonder most foremen say they have little time for methods, standards and control of count. And it becomes clear, too, how the union steward has been able to usurp the prerogatives of the foreman. The absentee foreman makes it easy for the steward to do what the foreman should provide.

In one of the country's largest and most progressive corporations, foremen were asked to list their duties in a typical day and the amount of time spent on each. The breakdown indicates that, even in the most efficient companies, too much time is spent away from direct supervision (in this case, 29 pct).

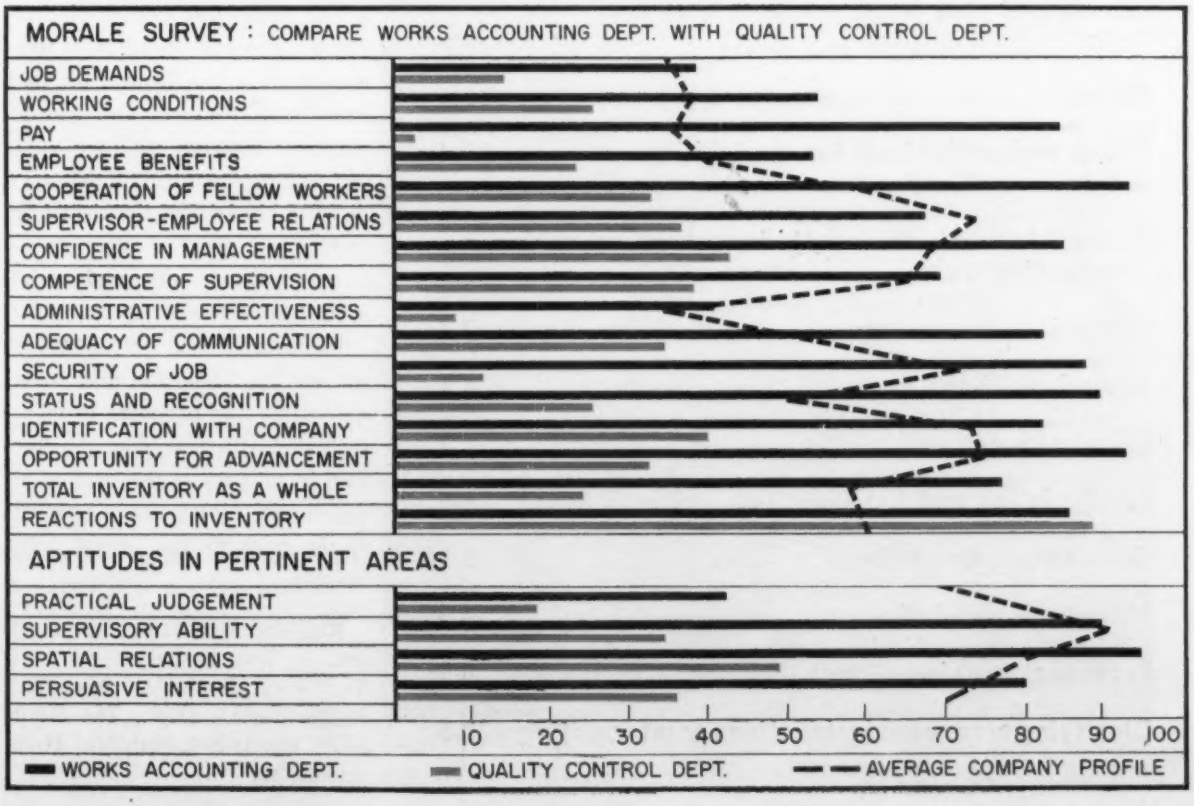
Room for Improvement—When asked if services could be improved to help them do a better job, 89.2 pct of these same foremen said "yes." Queried further, 76.8 pct said they spend too much time on paperwork, and 92.9 pct said they spend too much time in meetings.

Asked what they considered to be their most important duty as foremen, the answers were almost unanimous: "Direct supervision of the men." Yet, few foremen said that they had time to perform this main function. The company can't allow its front-line supervisors to devote more than half their time to service activities—no matter how pressing. Make no mistake about it: the foreman is the key to cost reduction in the plant.

Look for Leaders — The usual approach to naming a new foreman goes somewhat as follows: "Joe, tomorrow morning you become foreman of this department. You're the boss. Now here's a $10.00 a week raise; go out and

Aptitude for Leadership Relates to Morale

Above-Average Morale Goes Along with Higher Aptitudes



run the department." When a vacancy exists, the best worker in the department is merely upgraded.

Yet, the best worker doesn't always make the best foreman. The foreman must have leadership potential and achieve his success through others. And, if management doesn't maintain an effective employee inventory program run by qualified people, they will only be hoping that their key men make a profit for them. Progressive companies painstakingly plan for effective leadership.

The accompanying graph on the previous page shows that there's a correlation between morale and leadership aptitude of departmental supervisors.

Broaden Their Training—Equally as important as proper selection is the question of training these forgotten men of industry. Management must take the time to train its foremen—and not only in the problems of scheduling and the training and handling of people. Where incentive plans exist, they must know the basic details of wage incentives and time study. To the people in the shop, the foreman is management. Any of his actions are immediately interpreted as the policies of top management.

Probably one of the finest examples of proper foreman training in the administration of an incentive plan is the Giddings and Lewis Co., Fond du Lac, Wis. Every foreman has served an apprenticeship in the time study department.

All of them understand problems of wage incentives and the measurement of a day's work. How well the system works is borne out by the fact that the company union —I.A.M.—is opposed to the wage incentive principle.

It's Management's Ball—One of the immediate results of improper training is a sharp reduction in the foreman's leadership. Management doesn't delegate the task of settling problems relating to incentive questions in the shop.

Too often, foremen have nothing to say. They act as clerks, while the personnel people—who know very little of the actual problem or technical aspects—begin to call the plays.

The wise management is one which trains and delegates its foremen to work closely with the time study man to meet any and all questions head on with the union and union stewards. In that way, disputes are kept at the right level and in an area of plain talk—where everyone concerned understands the technical aspects.

Management can only blame itself for the weak, part-time supervision that's so prevalent in industry today. It's high time the foreman is put back at the head of his department. When he is, benefits to the company are almost unbelievable.

Where's the Foreman?

He Copes with Out-of-Department Chores

Breakdown of Daily Duties	Time Spent on Each Duty, pct
Follow up work	17.5
Assigning work	14.4
Liaison and plan work schedule with sales and other departments and shifts	11.3
Check machines and quality of work	11.1
Check materials: look for, find out about (closely related to first item)	10.4
General supervision, safety, housekeeping, cost reduction	7.8
Instruction to workers	7.2
Attend meetings	3.1
Telephone calls	2.3
Rescheduling and handling "special rush jobs"	1.4
Obtaining information	0.9
Miscellaneous duties	0.7
Personnel problems (including union matters)	0.5
Clarifying erroneous instructions or information	0.5

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Punched Tape Guides New Gage

A door opener to a new era in gaging, this numerically controlled machine is fast—and unmistakably accurate.

▪ Fabricators of complex metal shapes that take many hours or even days to inspect dimensionally will appreciate this. It's a numerically controlled machine that quickly and automatically gages such parts at any number of coordinate points on their inner or outer surfaces.

Known as the "Data - Limit" 6 Coordinate Measuring Machine, the unit was developed by Pratt & Whitney Co., Inc., West Hartford, Conn.

In one bold stroke it does away with the need for expensive special templates and gage tooling—items that are often short-lived in this age of fast-changing part designs.

Uses Punched Tape — Instead, the new machine responds to coded instructions stored on a reel of punched tape to make quick, accurate comparisons of actual workpiece dimensions with specified values. Moreover, a digital readout feature allows the user to store, print or mathematically process the machine's findings in almost any desired manner.

The machine has two gaging arms. Each can move in X, Z, and Theta coordinates. This combination of horizontal and vertical movement, plus rotary motion around the X and Z coordinates, insures that measurements are always made normal to the workpiece surface.

Input data on the punched tape is translated into machine motions that first bring the gaging arm and head to a reference point on the workpiece, and then position the gage head at a desired series of points in space. At each point the gage head automatically measures any deviation of the workpiece surface from its nominal location.

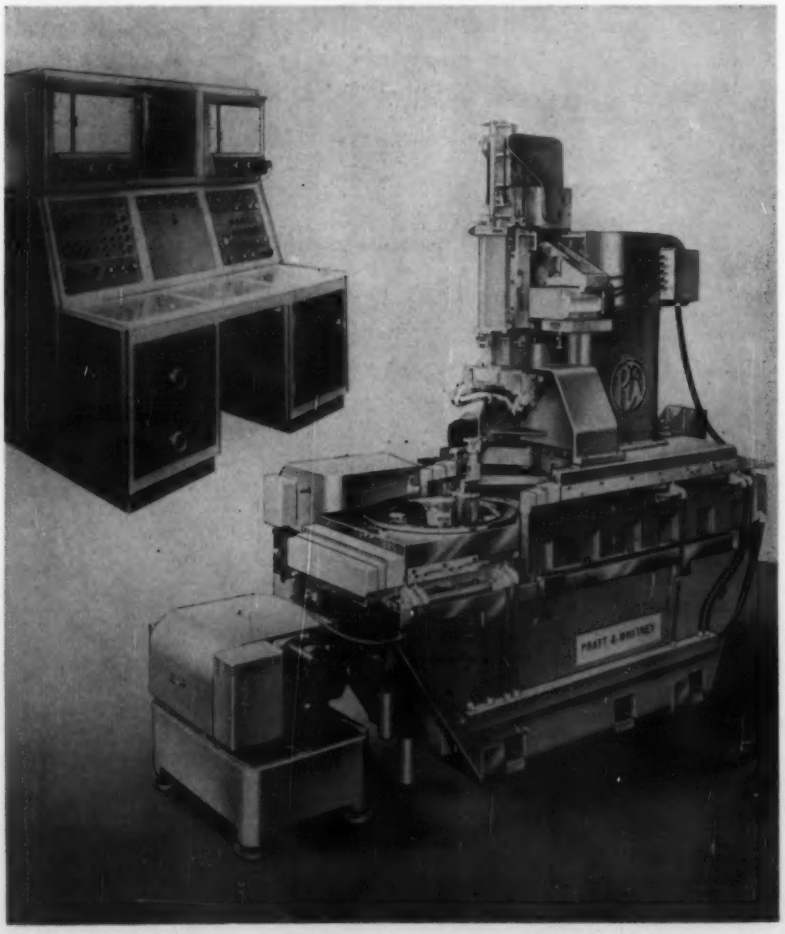
Maintains Accuracy — Pratt & Whitney officials say the machine's overall gaging accuracy is 0.00015 in., with a repeatability of 0.00005 in.

With the digital readout feature, measurement findings can be "remembered," added, subtracted, multiplied or divided. In this way, complex dimensional relationships involving taper, wall thickness, average section and the like, can be computed almost instantly.

Printed Record Helps — Digital readout is also ideal where gaged parts must be sorted for selective assembly, the company points out; a complete printed record can be obtained to make inventory control both simple and positive.

And, since digital readout eliminates the use of conventional dial indicators, human errors in gage reading cannot occur. This is often a problem where inspection involves tedious manual measurement of dozens, or perhaps hundreds, of specified points.

Finally, digital readout can be used for self-standardizing the gaging components, thus doing away with the need for physical masters.



FAST MEASURING: P & W's numerically controlled gaging machine (operator's console, top left) is built to match modern production lines.

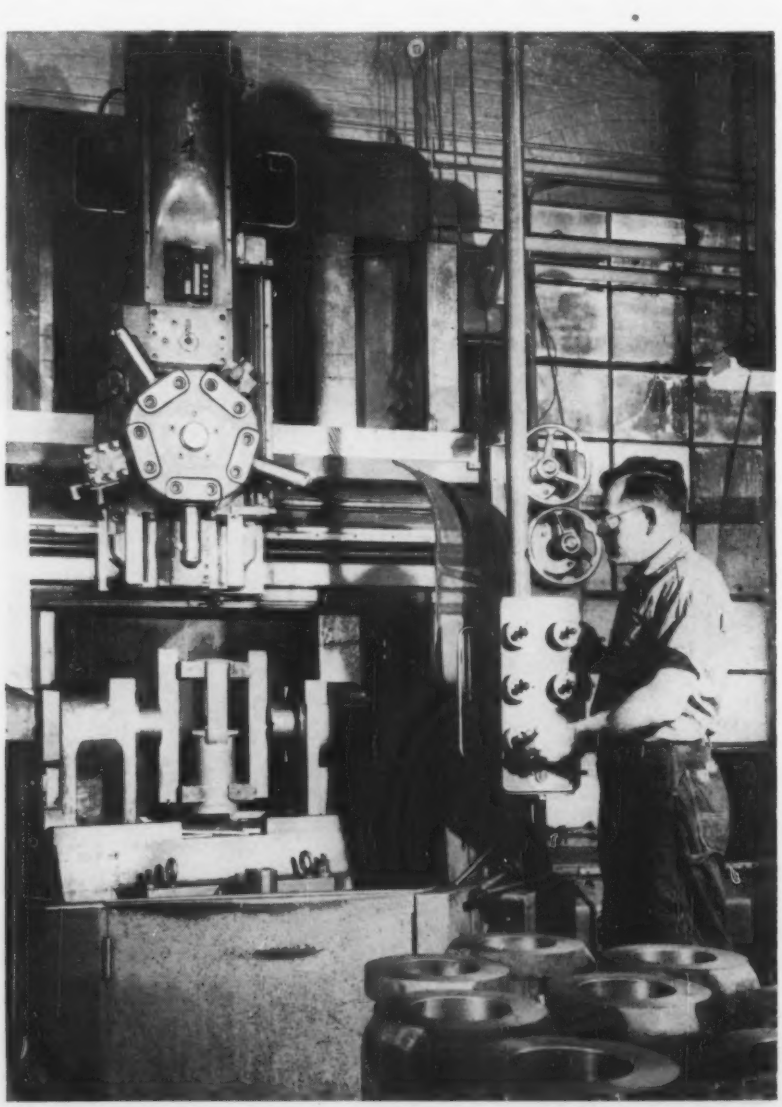
Plant Boosts Machining Output Fourfold With New Lathe

There is a resemblance, to be sure, between today's machine tools and those of 20 or 30 years ago. But they have little in common when it comes to performance and productivity.

▪ How do modern machine tools stack up with those of yesteryear? Run an old and a new vertical turret lathe side by side, as the Leslie Co. has done at its Lyndhurst, N. J., plant, and the advantages of modern equipment can't be denied.

The "old" in this case is a manually operated Bullard VTL the company bought in 1928. Still in excellent running order, it's used to a limited extent in producing parts for such items as valves, pressure and temperature regulators, and steam and air whistles.

The "new" is a 46-in. Bullard Cut Master, equipped with pendant control of its various automatic functions. This machine has been in operation for two years.



FAST CYCLE: Cast iron valve yoke is mounted on special fixture at start of 12-minute cycle which machines both ends of the workpiece.

Four Times Faster — Anthony Scelba, industrial engineer for the Leslie Co., notes a world of difference between the two units. "The Cut Master finishes valve bodies four times faster than the old lathe and gives us controlled production at the same time," he says.

For proof, he points to the job shown in the accompanying photographs. The workpiece, which must be machined on both ends, is an 18-in. long cast iron yoke for a diaphragm control valve.

With an assist from a Bullard-designed fixture that can turn the yoke end for end, the new machine does all the necessary facing, finish boring, chamfering and backfacing operations in about 12 minutes. Doing the same work on the manually controlled machine formerly took from 45 to 50 minutes.

Setups Took Time—"On the old machine," Mr. Scelba explains, "we had to chuck the yoke and machine one end of it. Then we had to take it off the table, turn it over, chuck it again and machine the other end. This took up a lot of time.

"But with the fixture on the Cut Master we fasten the workpiece in place only once. The 180° indexing feature of this tooling lets us swing the work to any angle, even end for end.

"The big advantage we get from this is controlled production," Mr. Scelba says.

"On the old machine we finished

the same ends of all pieces in a production run before turning them over to work on another face or end," he explains.

Contrast in Methods — "If we had, say, 80 pieces in a run, they would all have to be finished, at least on one side, before we could switch to another setup and start making completed pieces for assembly. Now, no piece leaves the lathe until it is completely machined, simply because we don't have to take it off and rechuck it."

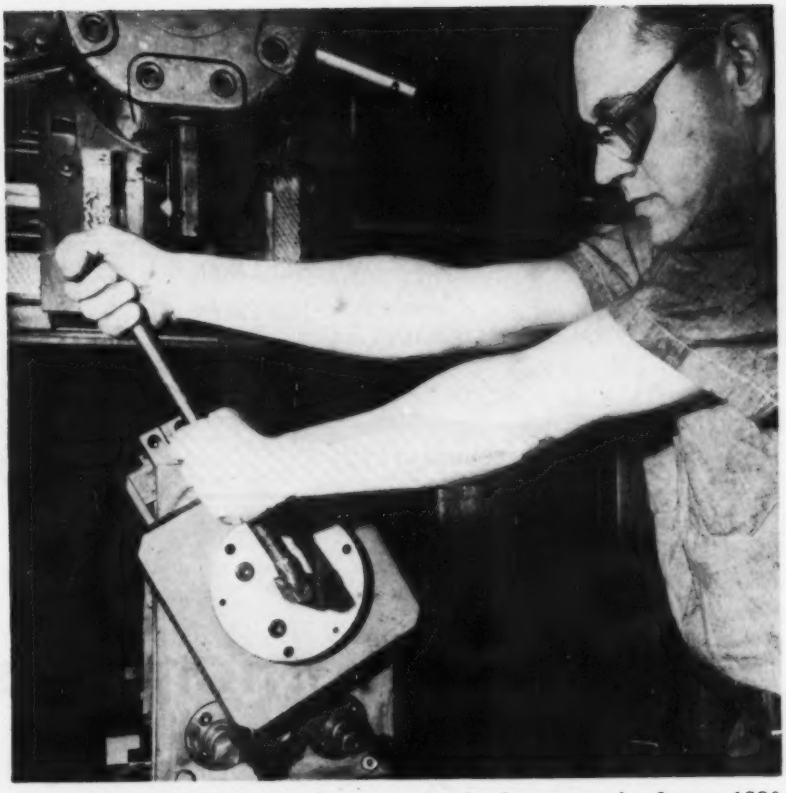
The new machine benefits production in other ways, too. For example, "We find the Cut Master to be an extremely rugged machine and a highly accurate one at the same time," Mr. Scelba says. "It lets us work to closer tolerances, and in indexing workpieces the full 180° we still get concentricity well within 0.001 in. It can take rough cuts on any metal and still remain highly accurate."

He also points out that the machine requires very little maintenance "despite the fact that it works three eight-hour shifts a day, five days a week."

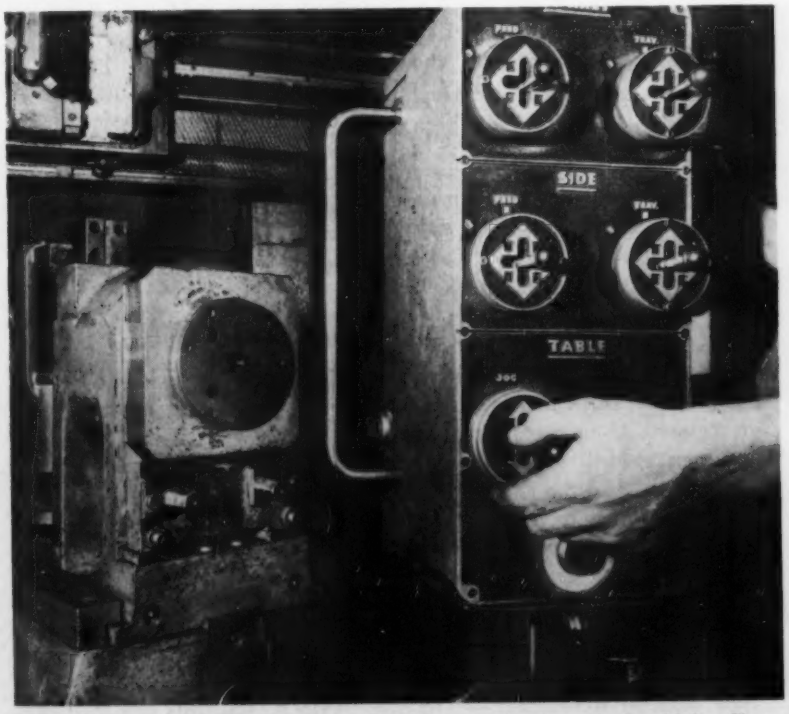
Like Pendant Control—Operators of the new machine, who get an incentive bonus based on increased production, are enthusiastic about the pendant control which permits operation from virtually any position with complete ease and no waste of time. "I can run an entire job without going to the handwheels at all," explains one operator.

In machining the cast iron yoke, a carbide tool in the first turret station faces, finish bores and chamfers the small end. The yoke is then indexed 180° so the second turret tool can face the large end of the piece, removing from ⅛ to 3/16 in. of metal.

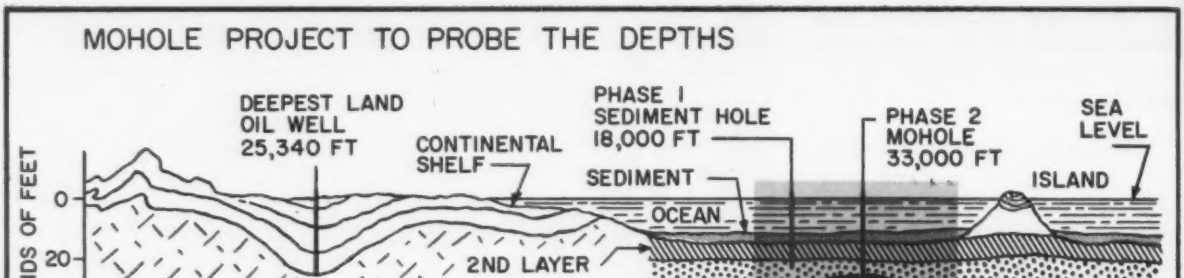
The yoke remains in the big-end-up position while a combination tool in the third turret station does the final work of finish boring, cutting a 0.007-in. step, and backfacing from inside the workpiece.



TO CHANGE ENDS: Machine operator simply rotates the fixture 180° to bring either end of the valve yoke into position under the turret.



HANDY FEATURE: Operators like the pendant control which allows them to guide all machining operations from almost any position.



WHAT'S DOWN THERE?: Man has asked this question since time began. Now he proposes to drill and find out.

Search for Tomorrow's Metals

U. S. Plans to Sample Unknown Areas Beneath the Sea

Can the earth continue to yield enough minerals and metals for tomorrow's needs?

Scientists hope to find the answer by exploring deep below the ocean floor.

▪ Projects for exploring outer space may soon be sharing headlines with an exciting U. S. program of discovery aimed in exactly the opposite direction.

An American scientific team plans to drill a hole deeper toward the core of the earth than man has ever ventured. Using a seagoing rig, the plan is to drill more than six miles straight down. This would push a hole through the sediment on the ocean floor, through the underlying layer of earth "crust," and into the 1800-mile thick "mantle" which surrounds the core of the earth itself.

New Mineral Resources? — The object is to bring up core-drill samples of materials that exist at the tremendous pressures and temperatures of these unknown depths. The project, if successful, will add much to man's knowledge of the earth's geochemical history.

More importantly, it may answer a pressing question posed by a booming world population and the pell-mell growth of a hundred different technologies: Can the earth continue to yield enough mineral resources to support future human and scientific progress?

Need $15 Million — The deep-hope drilling project is being promoted by the AMSOC (American Miscellaneous Society) Committee of the National Academy of Sciences. The distinguished earth scientists who make up the committee admit they chose its name in a moment of whimsy. But they're professionally serious about their depth-probing plan; they've asked Congress for $15 million to do the job.

AMSOC scientists call their plan the "Mohole Project," inasmuch as they intend to penetrate the mysterious "Moho Boundary" shown in the accompanying sketches. This discontinuity between the earth's crust and mantle was first defined in 1912 by Prof. A. Mohorovicic as the depth at which earthquake waves show a marked change in velocity.

Details of the Mohole Project were disclosed recently by Dr. Gordon C. Lill, AMSOC Committee chairman, who also heads the Geophysics Branch of the Office of Naval Research.

Plan is Feasible — Speaking in Birmingham, Ala., at a conference on "This Undiscovered Earth," sponsored by Southern Research Institute, Dr. Lill said: "We have decided that drilling from a barge over the deep ocean to depths below sea level of around 30,000 ft is perfectly feasible. We are working on the site selection now."

Site selection is important, Dr. Lill explained, "because we must be sure to drill where we can reach the mantle. We have discovered that the crust under the ocean basins is thin-

ner than it is under the continents."

Four Potential Sites—Some preliminary work on site selection has already been done with funds supplied by the National Science Foundation. This work showed three locations in the Pacific Ocean and one in the Atlantic which could possibly serve as drilling sites, since the depth from the surface of the water to the mantle is less than 31,000 ft at each location.

"In drilling the hole," Dr. Lill said, "we are becoming assured that more or less standard drilling techniques may be used, just as in drilling for oil offshore."

At present there is no existing rig capable of sinking a hole to the depth the committee hopes to reach. But oil-industry authorities believe it's possible to go as deep as 50,000 ft by assembling the best of deep drilling equipment and technology.

Two-Stage Plan—The committee has worked out a two-phase plan for its Mohole Project. Phase I envisions modifying an existing offshore drilling rig and attempting to drill 18,000 ft below the surface in a deep water location.

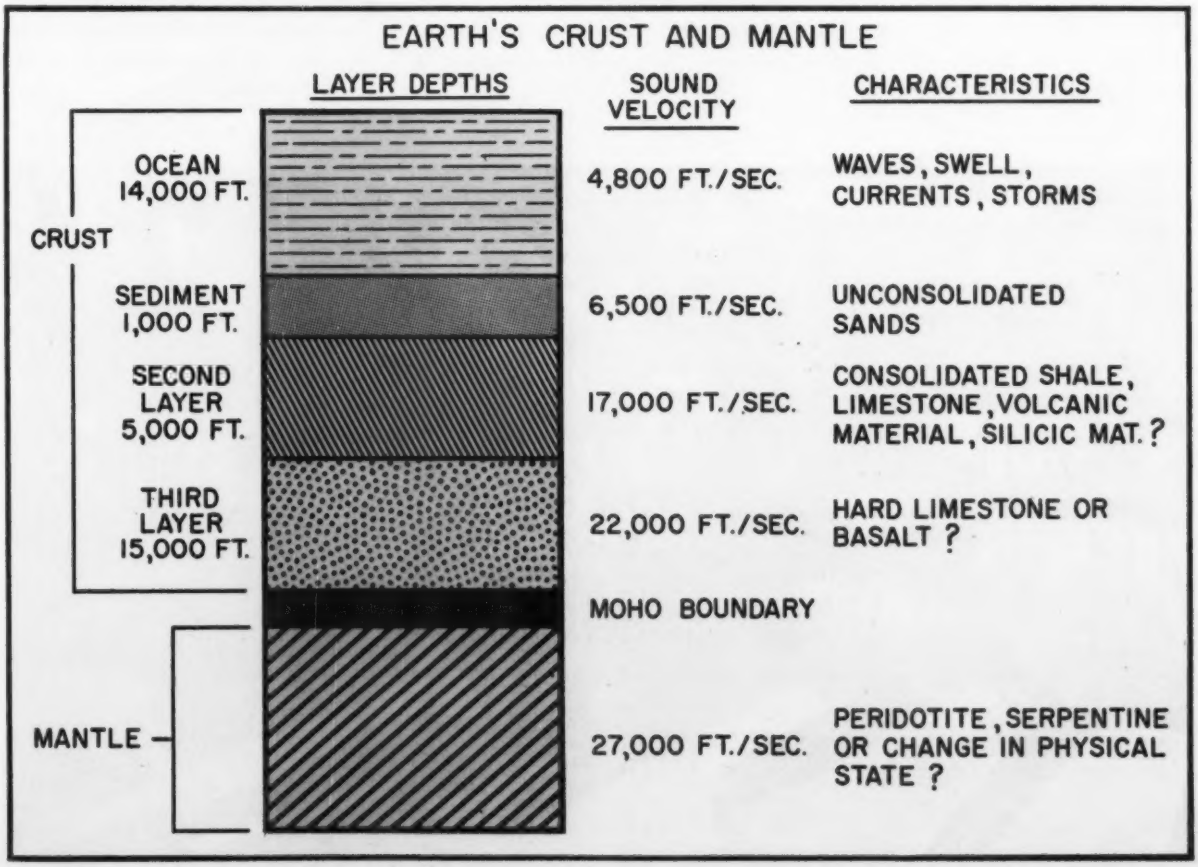
Although Phase I will not try to reach the Moho Boundary, scientists feel it will yield much valuable information, nevertheless. An 18,000-ft deep hole will reach completely through the sediment layer of the ocean floor and sample underlying layers of the crust. To date, oceanographers and geologists have only been able to speculate as to the nature of the materials contained in these strata.

Need Special Rig — Knowledge gained in Phase I will enable the committee to design a special Phase II drilling rig to reach at least 31,000 ft below the surface, plunging through the Moho Boundary to unlock the secrets of the mantle.

Saying that "we are not engaged in a race for the mantle at the moment," Dr. Lill noted, however, that in September, 1957, "the Russians announced they had the equipment and capability to do the job. Subsequent to that we learned there is a special branch of the Soviet Academy of Science dedicated to the problems of deep drilling."

If Congress will vote the necessary funds immediately, the committee believes it could wrap up Phase I by July 1 of 1960. Following this, members believe they could have a Phase II rig ready by July of 1961, and that they could reach the mantle by the end of 1962.

Treasure House of the Future?



KEY LAYERS: Earth scientists know these layers exist, but no one is sure about the materials they contain.

Single Drawing Shapes Fenders

Sheet metal shops always keep one eye on economy.

Here's one that cut its fender forming to a single drawing without trimming.

■ Thanks to some sound design work, one firm has shaved its production costs to the extent that it now claims a healthy corner of the fender market. According to the company's president, C. A. McLeod, Sr., "With one hit in the die on a shaped blank we produce fenders that do not have to be trimmed."

This sheet metal shop, Saginaw Sheet Metal Parts Corp., is turning out fenders for many uses, including farm tractors and boat trailers. The end product now rolls off the line with a single drawing operation without trimming.

Down to the Beach—The Saginaw firm shapes fenders for Peterson Brothers, Inc., the Jacksonville, Fla. maker of "Gator" boat trailers. The metal used on these units is Jones & Laughlin's 16-gage drawing quality cold-rolled sheet.

These fenders must have a 4½ in. draw depth, a 26 in. length and a 7¾ in. width. And a 12 in. radius across the crown runs in a 1½ in. radius on each side.

How It's Done—The process begins by shearing rectangular blanks from the sheet. The blanks should be made to a size that can be shaped by a blanking die. The flat blanks are then formed along the sides to a specified radius. This will assure exact fit in the die.

Then the die takes over. In one action the desired fender shape is formed. Since the blank has already been sheared to size, there are no edges to be trimmed.

The final step is to punch the mounting holes. Only enameling is needed to finish the job.

The Metal's the Thing — The Michigan firm knew that such short cuts were impossible without the proper grade of sheet metal. The die had to produce a fender with a smooth, unwrinkled surface.

And so they found a ductile steel with a uniformly fine grain structure. The heavy gage was chosen so that it could support a man's weight when in use.

Some of the fenders made for International Harvester have a 37 in. radius. These fenders are crown rolled from 22½ by 96-in. flat blanks. They also receive a 17½-in. rounded contour.

The steel used in this drawing process resists work hardening. In fact, Jones & Laughlin puts the steel through the rollers eight times, and as a result attains a hardness of 60 to 70 Rb. In its work, the Saginaw concern buys the 16-gage sheet in 120 in. lengths, ranging from 36 to 60 in. wide.

FENDER SHAPING: One hit by this special die and shaped blanks become boat trailer fenders.

WHERE UNIFORM QUALITY IS A MUST...

Acme-Newport Steel

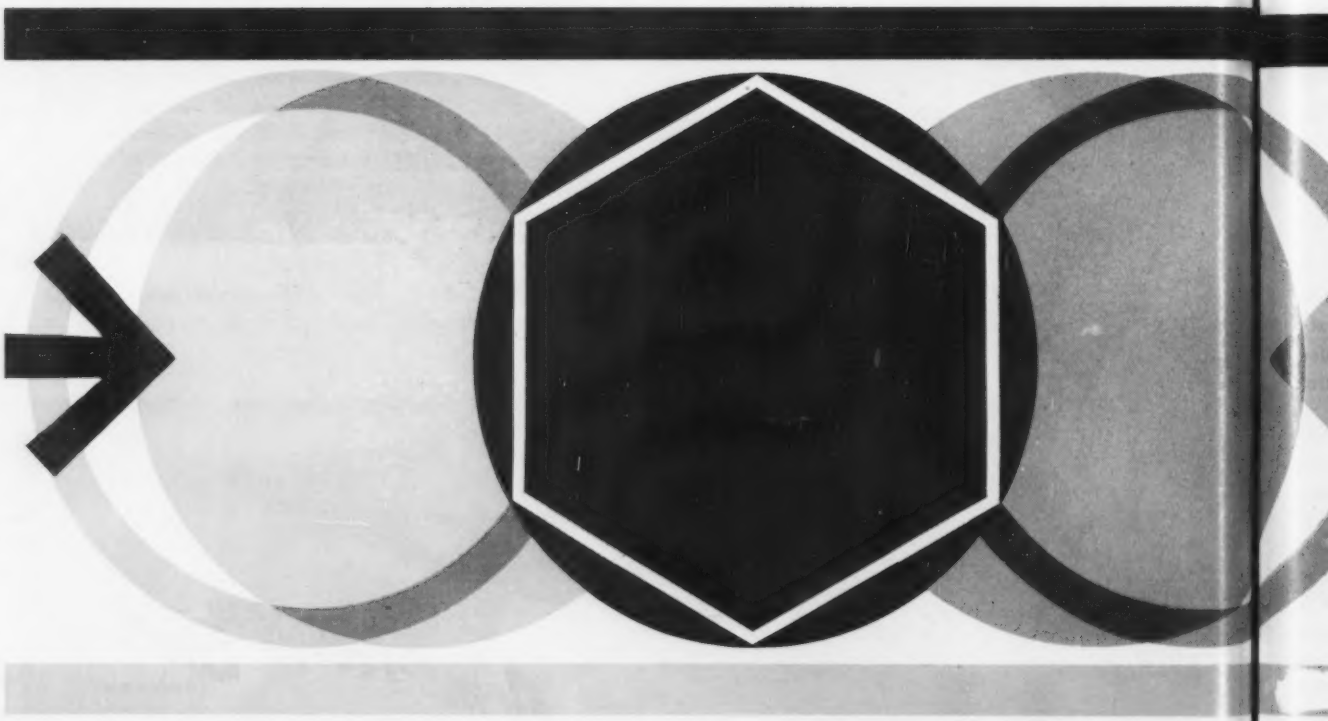
It takes a basic steel producer of long experience and modern facilities to supply the consistent quality demanded for vital spacecraft components. Acme-Newport is such a mill, long known for the excellence of its specialized aircraft quality alloy sheets and plates. Also hot and cold rolled carbon grades and other steel essential to all-out defense and expanding economy. Acme-Newport combines high quality with dependable service to make us the logical source for your better steel requirements. Let us tell you more.

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY

NOW...IMMEDIATELY AVAILABLE FROM YOUR NEARBY OLIN ALUMINUM DISTRIBUTOR... COLD PROCESSED ROD AND SCREW MACHINE STOCK



Just call your nearby Olin Aluminum Distributor for all the high-quality aluminum rod and screw machine stock you need . . . when and as you need it.

Olin Aluminum is today's fast-moving, machinable metal. It gives you top-speed cutting. It's rapidly handled and shipped. It's cold processed for uniform grain structure (a quality plus). You get three times as many parts per pound as you get with other metals and—in many cases—they need no further finishing. You save many ways!

It pays you many ways as well, when you make your Olin Aluminum Distributor your metals service center for both ferrous and non-ferrous metals. You'll get:

- **The fastest possible service**
- **Aluminum to meet your precise requirements**
- **Extra manufacturing space by minimizing your inventory**
- **Technical assistance backed by the metallurgical facilities of Olin Aluminum—a major, fully-integrated producer**

OLIN ALUMINUM COIL, FLAT SHEET AND PLATE...
ROD AND BAR...EXTRUDED SHAPES...PIPE AND TUBING

DISTRIBUTORS FROM COAST TO COAST

For Mill Products, Call:

ALABAMA
BIRMINGHAM
Atlantic Steel Co.
4230 First Avenue, South
P. O. Box 3067
WOrth 1-2147

CALIFORNIA
BERKELEY
A. M. Castle & Co.
717 Potter St.
THornwall 5-2210

LOS ANGELES 58
A. M. Castle & Co.
2200 E. 55th St.
LUdlow 9-6611

LOS ANGELES 22
Jones & Laughlin Steel Corp.
2131 So. Garfield Ave.
RAymond 3-4581

SAN FRANCISCO 19
A. M. Castle & Co.—P.O. Box 3453
ATwater 2-6920

COLORADO
DENVER 1
M. L. Foss, Inc.
1485 Rio Court—P. O. Box 57
KEystone 4-5151

FLORIDA
FT. LAUDERDALE
Caulley Steel & Supply Co.
1800 N.W. 22nd Street
P. O. Box 581
LUdlow 3-7650

MIAMI
Caulley Steel & Supply Co.
150 N.W. 73rd St.—PLaza 4-2754

ORLANDO
Caulley Steel & Supply Co.
1722 N. Mills St.—GArden 5-3528

GEORGIA
ATLANTA
Atlantic Steel Co.
575 - 14th St. N.W.
P. O. Box 1714
TRinity 5-3441

ILLINOIS
CHICAGO
A. M. Castle & Co.
3400 N. Wolf Road
NAtional 5-6411

CHICAGO 39
Guardian Aluminum Sales, Inc.
4944 W. Bloomingdale Ave.
NAtional 2-5808

CHICAGO 32
Lafayette Steel & Alum. Corp.
4100 S. Karlov Ave.
LAfayette 3-7632

LOUISIANA
NEW ORLEANS 9
Woodward Wight & Co. Ltd.
451 Howard Ave.
P. O. Box 370
TUlane 2471

MARYLAND
BALTIMORE 11
Brass & Copper Supply Co. Inc.
501 W. 23rd Street
BElmont 5-1500

BALTIMORE 24
A. M. Castle & Co.
P. O. Box 5295
Dickens 2-4000

MASSACHUSETTS
BOSTON 10
Kelco Metal Products Co.
51 Sleeper Street
HUbbard 2-1737

WORCESTER
Kelco Metal Products Co.
61 Milton Street
PLeasant 3-7625

MICHIGAN
DETROIT 34
Production Steel Products Inc.
20001 Sherwood Ave.
TW. 3-5000

MINNESOTA
MINNEAPOLIS 14
Keelor Steel, Inc.
909 9th St. S.E.
FEderal 3-4291

MISSOURI
NORTH KANSAS CITY
A. M. Castle & Co.
1 West 10th Street
GRand 1-3666

NEW JERSEY
NEW BRUNSWICK
Morrison Steel Co.
475 Jersey Avenue
P. O. Box 350
CHarter 7-8400

NEW YORK
BUFFALO 17
Seneca Steel Service Inc.
1050 Military Road
Riverside 7920

NORTH CAROLINA
CHARLOTTE 1
Brass & Copper Supply Co. of Carolina
700 West 5th Street
FRanklin 5-5508

OHIO
CLEVELAND 13
Midwest Aluminum Supply Corp.
2530 W. 3rd Street
PRospect 1-8240

CLEVELAND 5
The Universal Steel Co.
6600 Grant Avenue
VUlcan 3-4972

OKLAHOMA
OKLAHOMA CITY
McCormick Steel Co.
2101 So. Villa—P. O. Box 1234
MElrose 4-1492

PENNSYLVANIA
PITTSBURGH (McKEES ROCKS)
Follansbee Metals Co.
Division of Century America Corp.
200 Bradley Street
FEderal 1-8200

PHILADELPHIA 31
North American Brass & Copper Inc.
1580 N. 52nd St.
TRinity 8-5300

TENNESSEE
KNOXVILLE
Steel Supply Co.
Beverly Road
MYrtle 1-1163

TEXAS
DALLAS
McCormick Steel Co.
11815 Denton Drive
P. O. Box 14224
CHapel 7-3104

HOUSTON
McCormick Steel Co.
1110 Lockwood Drive
P. O. Box 1756
ORchard 2-6671

LUBBOCK
McCormick Steel Co.
Plainview Highway
P. O. Box 1182
POrter 2-8793

WASHINGTON
SEATTLE 4
A. M. Castle & Co.
3660 E. Marginal Way
MAin 3-0565

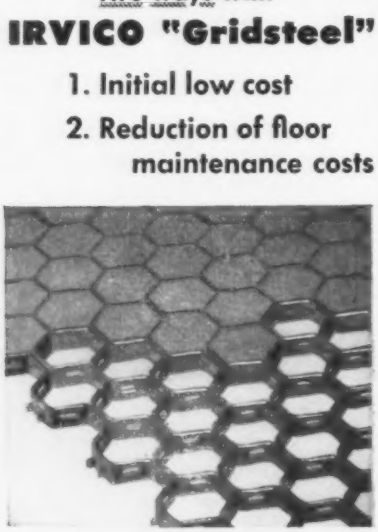
OLIN ALUMINUM®

OLIN MATHIESON • METALS DIVISION • 400 PARK AVENUE • NEW YORK 22, N. Y.

"GRIDSTEEL" Pays for itself!

...You save two ways with
IRVICO "Gridsteel"

1. Initial low cost
2. Reduction of floor maintenance costs



"Gridsteel" protects floors from the damage normally caused by impact, skidding, vibration and heavy traffic. "Gridsteel" is made of steel bars on edge, joined together in a honeycomb mesh pattern. No potholes or ruts can form because any crack in the fill cannot spread beyond a single steel mesh.

"GRIDSTEEL"
will protect floors made of wood, concrete, or asphalt.

Write today for complete information
Ask for 20-page color catalog
on "Gridsteel" Floor Armor

★

"A Fitting Grating for Every Purpose"

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5027 27th St., LONG ISLAND CITY 1, N. Y.
1027 10th St., OAKLAND 23, CALIFORNIA

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 131.

Battery-Water Unit

A simple, compact, low-cost unit for converting tap water to pure battery water is described in a bulletin. (A. E. Tomkin & Co.)

For free copy circle No. 1 on postcard, p. 131

Cast-Iron Pulleys

A line of quality cast-iron pulleys is completely described and specified in a bulletin. (Sprout, Waldron & Co., Inc.)

For free copy circle No. 2 on postcard, p. 131

X-Ray Inspection

A line of supplies and accessories for X-ray inspection of metal components is illustrated in a brochure. (Radiatron Mfg. Corp.)

For free copy circle No. 3 on postcard, p. 131

Coffing Hoists

Complete information about five models of a new series of Coffing Hoists, capacities ¾ to 6 tons, is provided in a brochure. (Duff-Norton Co., Coffing Hoist Div.)

For free copy circle No. 4 on postcard, p. 131

Materials Containers

A brochure illustrates a truck-mounted material-handling system employing detachable containers ranging in size from 6 to 40 cu yd, and handling loads up to 15 tons. (Dempster Bros.)

For free copy circle No. 5 on postcard, p. 131

Gasoline Engines

Four-cylinder water-cooled engines operable on gasoline, kerosene, LPG, or natural gas, and capable of developing up to 93 hp, are described in a two-page data sheet. (Hercules Motors Corp.)

For free copy circle No. 6 on postcard, p. 131

Battery Chargers

A line of portable automatic units for charging industrial truck batteries, up to four at a time, is described in a four-page brochure. (Hobart Bros. Co.)

For free copy circle No. 7 on postcard, p. 131

Locomotives

A complete line of locomotives, gasoline- or diesel-powered, in weights from 3 to 80 tons, for a variety of hauling operations, are illustrated and specified in an attractive eight-page brochure. (Plymouth Locomotive Works)

For free copy circle No. 8 on postcard, p. 131

Low-Cost Tooling

A 66-page case book illustrates low-cost tooling with a line of standard industrial power tools, used in combination with other tools, with automatic controls, and in special setups to combine operations, automate operation, increase production, improve quality, and perform operations normally performed on more expensive

special-purpose machines. (Delta Power Tool Div., Rockwell Mfg. Co.)

For free copy circle No. 9 on postcard, p. 131

Rubberized Abrasives

A kit of rubberized abrasives especially for tool and die makers contains 80 wheels and points in four grit textures, and four mandrels for a ⅛-in. chuck. It is described in literature. (Cratex Mfg. Co.)

For free copy circle No. 10 on postcard, p. 131

Electric Motors

A line of electric motors, ½ to 7½ hp, with integral capacitor to increase starting torque and decrease starting current, is described in a bulletin. They are recommended for rugged applications. (The Peerless Electric Co.)

For free copy circle No. 11 on postcard, p. 131

Carbon Weld Products

A manual describes in detail how to use carbon plate, rod, and paste to speed up welded repairs and eliminate jigs and fixtures on many jobs. (The Arcair Co.)

For free copy circle No. 12 on postcard, p. 131

Goggle Respirator

A four-page brochure illustrates a face-mask goggle-respirator combination, featuring quick interchange of 13 different types of filter units for different purposes. (American Optical Co.)

For free copy circle No. 13 on postcard, p. 131

Mobile Crane

A 360° swing-boom crane car that picks up its rated capacity and travels with it, without the use of jacks or outriggers, is illustrated in a bulletin. Models of 12,000- and 20,000-lb capacity are available. The boom telescopes. (Silent Hoist & Crane Co.)

For free copy circle No. 14 on postcard, p. 131

Dual Riveter

A hydraulic-powered dual riveter can be adapted to a wide range of setups, and can speed up production riveting with quality results. It is tooled to set pairs of ¼-in.-diam steel rivets, with spacing between adjustable from 1½ to 18 in. The

METAL CLEANING ANSWERS...

AT YOUR FINGERTIPS

How many hours have you spent in digging for the right cleaning method for some newly-encountered metal or soil?

To answer your needs, Magnus has prepared this new, easy-to-read, easy-to-file folder — a complete chart-guide to picking the right method, chemical and solution for all commonly-encountered soils and surfaces.

COVERS
SOAK CLEANING
SPRAY WASHING
MACHINE CLEANING
ELECTROCLEANING
STEAM GUN CLEANING

MAGNUS CHEMICAL CO., INC.
46 South Avenue, Garwood, N. J.

Please send me my **free** copy of your new "Guide to Effective, Economical Metal Cleaning."

Name_____

Position_____

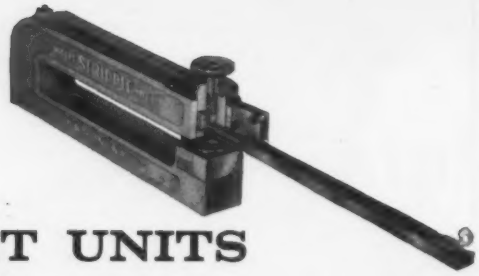
Company_____

Address_____

City_____ State_____

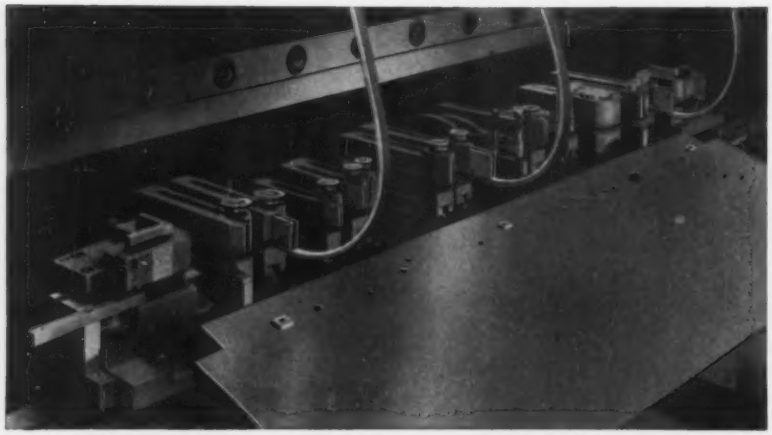
magnus
CHEMICAL COMPANY INC.
MATERIALS · METHODS · MACHINES

A WORLD-WIDE ORGANIZATION SPECIALIZING IN THE CLEANING AND PROTECTION OF ALL SURFACES



NEW STRIPPIT UNITS

. . . stake nuts permanently with every press stroke!



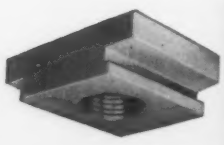
STRIPPIT PIERCE NUT UNITS save operations, time and money in assembly panel production with single-stroke insertion of Fabristeel Multipierce Nuts* into sheet metal up to .125″ thick.

Permanent Fastening by an Exclusive New Process—as nut pierces stock, metal flows into nut shoulder slot, becoming an integral part of the stock.

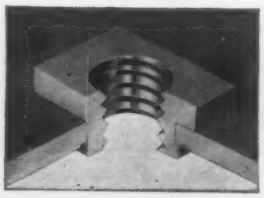
High-Speed—fast press setups, automatic feed of nuts to units for long, medium or short runs gets maximum production per press.

Flexibility—Pierce Nut Units can be quickly press-mounted in any desired pattern, changed on short notice, re-used over and over.

*A Product of Fabristeel Products, Inc.



Each nut is its own punch, a new one each time



Die button causes material to flow into nut slot

Simultaneous embossing for flush fastening

WRITE FOR DEMONSTRATION on your press! The speed and simplicity of Strippit Pierce Nut operation has to be seen to be believed. Also request new catalog for complete specifications.

WALES STRIPPIT INC.

202 Buell Road, Akron, New York

In Canada: Strippit Tool & Machine Company, Brampton, Ontario

A UNIT OF HOUDAILLE INDUSTRIES, INC.

FREE LITERATURE

machine is described in a bulletin. (Tomkins-Johnson)

For free copy circle No. 15 on postcard, p. 131

Drill Fixture

An adjustable drill fixture for drilling safety-wire holes in ¼- to 1½-in. hexagons, nuts, bolts, etc., has a quick-acting cam lock and features exact adjustment for location of the hole. It is illustrated in a catalog. (Ace Drill Bushing Co.)

For free copy circle No. 16 on postcard, p. 131

Forklift Trucks

Product specifications describe a new line of forklift trucks consisting of eight models with lift capacities from 2000 to 5000 lb, and featuring compact size, mechanical improvements, and a wide range of standard lift heights. (Towmotor Corp.)

For free copy circle No. 17 on postcard, p. 131

Hardened Ways

Seven standard cross-sections of hardened and ground bedways and crossways, in over 60 sizes, are illustrated in a bulletin. (The Ohio Knife Co.)

For free copy circle No. 18 on postcard, p. 131

Nickel Tubing

Chemical, physical, and mechanical properties of four types of nickel tubing are listed in a folder. Available in seamless tubing from 0.012- to 1.125-in. OD, the types are "A" Nickel, Low Carbon Nickel, "D" Nickel, and Duranickel. (Superior Tube Co.)

For free copy circle No. 19 on postcard, p. 131

Removable Punches

A four-page brochure illustrates and explains the operation of a series of removable punches, which cut costs by being quickly changeable and by using soft, easily machined retainers. (Pivot Punch & Die Corp.)

For free copy circle No. 20 on postcard, p. 131

brighten homes, brighten sales with life-long beauty

UNILOY
STAINLESS STEELS

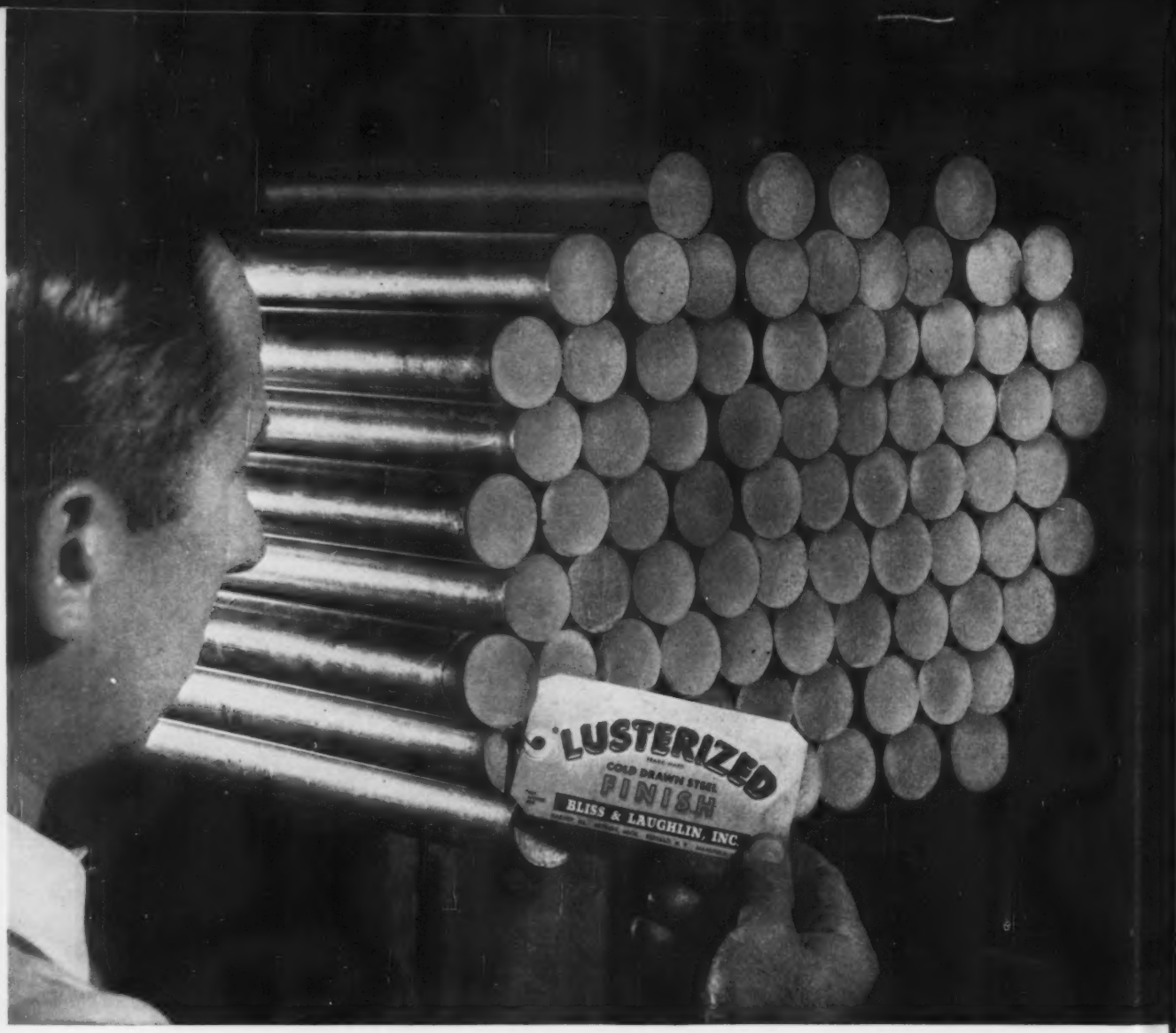
The gleaming beauty, plus the permanence and ease of cleaning have made stainless steel the wife's delight—and sold many a home.

When made from Uniloy stainless steel, flatware, utensils, and other kitchen accessories have that inviting blend of beauty and permanence so appealing to the modern homemaker.

Uniloy stainless steels—easy to work and form—are rolled to most exacting specifications by steel makers who have been making specialty steels since 1884.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

STAINLESS STEELS • TOOL STEELS • HIGH TEMPERATURE METALS



Is Your Production Benefiting from the BIG DIFFERENCE in Cold Drawn Bars?

These benefits are realized immediately when you take advantage of the big difference in cold drawn steel bars—the exclusive Bliss & Laughlin Lusterized Finish difference:

The absence of drawing oils, lime and processing grit smooths out production runs, keeps automatic screw machine collets and collet sleeves free from clogging and enhances tool life. The Lusterized surface requires no machining for many parts. Pre-production handling is less messy, thanks to a Bliss & Laughlin inspired contamination-resistant protective oil.

Another development from nearly 70 years of research and leadership in producing cleaner and brighter cold finished steel bars, the exclusive Bliss & Laughlin Lusterized Finish costs no more. All Lusterized carbon bars conform to the new, closer tolerances recently announced by Bliss & Laughlin, too. That is why it pays doubly well to specify Bliss & Laughlin Lusterized Finish.

If the benefits of Lusterized Finish have not been demonstrated for your production, a visit with a Bliss & Laughlin representative will be rewarding. There is a good chance that the big difference in cold drawn steel bars can make a big difference in your production, also. Why not write or phone your Bliss & Laughlin representative now?

Originators of LUSTERIZED® Finish—The BIG DIFFERENCE in Cold Drawn Steel Bars

BLISS & LAUGHLIN

GENERAL OFFICES: Harvey, Ill. • PLANTS: Harvey, Detroit, Buffalo, Mansfield, Mass.

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Gear Specialties

"High Gear," Number Three, 1959, features special transmissions, servos, gearmotors, and other devices recently developed by a gear manufacturer. News of current research and development efforts is included. (Western Gear Corp.)

For free copy circle No. 21 on postcard

Deep-Groove Bearings

Complete information on a line of deep-groove ball bearings is presented in a 12-page bulletin. Dimensions, loads, and other application data are included. (Hoover Ball and Bearing Co.)

For free copy circle No. 22 on postcard

Fiberglass Duct Fans

A line of fiberglass belt-drive duct fans offering exceptional resistance to most corrosive elements is described in a bulletin. They are available in diameters of 20, 24, and 28 in., with a variety of drives. (Hartzell Propeller Fan Co.)

For free copy circle No. 23 on postcard

Plunging Technique

"Plunging Sil-Mag Alloys" describes a technique used in the production of ductile iron. It reviews the history of plunging and discusses the process, equipment used, and the sil-mag alloys employed. (Ohio Ferro-Alloys Corp.)

For free copy circle No. 24 on postcard

Modular Benches

An illustrated six-page bulletin describes modular-assembly benches which can be built to any shape or size from standard parts. (Products For Industry, Inc.)

For free copy circle No. 25 on postcard

Work Positioner

A 2000-lb-capacity, fully powered work positioner, tiltable 105°, and traveling 0 to 4 rpm, is described in a bulletin. (Boesch Mfg. Co., Inc.)

For free copy circle No. 26 on postcard

Dripproof Motors

A line of motors with spiral-baffle cooling run cool and are protected against entrance of falling particles or dripping liquids. They are described in a bulletin. (Fairbanks, Morse & Co.)

For free copy circle No. 27 on postcard

Protector Air Valves

Three-way protector air valves for presses and other air-clutch machines are described in a brochure. Failing safe, they are available in 1¼- and ¾-in. pipe sizes. (The Clark Controller Co.)

For free copy circle No. 28 on postcard

Microhoning

The May-June, 1959, issue of "Cross-Hatch" shows the application of Microhoning to motor stator bores, and provides information on the technique. (Micromatic Hone Corp.)

For free copy circle No. 29 on postcard

Corrugated Boxes

Design consultation services and production facilities offered by a manufacturer of corrugated shipping containers are described in a brochure. (Hoerner Boxes, Inc.)

For free copy circle No. 30 on postcard

Fluid Control Valves

Bulletins are available on two new liquid controls. One is a safety shutoff valve which shuts off automatically if a line break occurs, preventing fluid loss and hazard. Fire closes it, also. The other is a com-

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 7/30/59

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page .....Product .....

Page .....Product .....

Page .....Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....

FIRST CLASS
PERMIT No. 36
NEW YORK, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

FIRST CLASS PERMIT No. 36 NEW YORK, N. Y.

POSTAGE WILL BE PAID BY

THE IRON AGE

Post Office Box 77, Village Station

NEW YORK 14, N. Y.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 7/30/59

Circle numbers for Free Technical Literature, Design Digest, or New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

If you want more details on products advertised in this issue fill in below:

Page ..... Product .....

Page ..... Product .....

Page ..... Product .....

INVALID WITHOUT COMPANY NAME—TYPE OR PRINT

Name .....

Title .....

Product Manufactured .....

Company .....

Co. Address .....

.....

City ..... Zone .... State .....

FREE LITERATURE

bination temperature and pressure regulator suitable for up to 250 psi and 450°F, and for use with steam, water, air, oil, gas, and chemicals. (Jordan Corp.)

For free copy circle No. 31 on postcard

O-Ring Guide

A booklet gives data pertinent to O-ring selection, installation, lubrication, and maintenance. It also covers materials, machining, and finishes which work best with O-ring sealing. An O-ring line, and engineering services, are offered. (Auburn Mfg. Co.)

For free copy circle No. 32 on postcard

Proper Use of Dies

The Spring, 1959, issue of "Die Set Digest" discusses the advantages of systematic die maintenance and inventory control, and includes some questions and answers on the proper use of dies. (The Producto Machine Co.)

For free copy circle No. 33 on postcard

Polyphase Motors

Polyphase motors, ½- to 30-hp, in frame sizes from 56 to 326U, and available in various special-purpose designs, are described in a bulletin. (The Peerless Electric Co.)

For free copy circle No. 34 on postcard

Miniature Switch News

"Uses Unlimited," Vol. 11, No. 3, tells design engineers and others what's new in one company's line of miniature switches, and illustrates some applications of them. (Micro Switch, A Div. of Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 35 on postcard

Blind Panel Fastener

Design and application of a readily removable and reusable blind-type panel fastener are described in a technical bulletin. This high-strength shear fastener can be inserted, tightened, and later removed—all from one side of a panel or sheet-metal assembly—with an inexpensive attachment to a power tool. A line of these fasteners, running from 3/16-, to ⅜-in. diam, is specified, (Standard Pressed Steel Co.)

For free copy circle No. 36 on postcard

Carbide End Mills

A 12-page catalog describes a line of precision-ground, fluted solid-carbide end mills. They come in 15 styles in sizes from 1/16- to ¾-in. diam, and with 2, 3, and 4 flutes. A table of suggested speeds and feeds for 19 different materials is included. (Kennametal, Inc.)

For free copy circle No. 37 on postcard

Deburring Solution

A chemical deburring solution for Camak 3 diecastings that cuts immersion time and speeds handling is described in a data and instruction sheet. (MacDermid Inc.)

For free copy circle No. 38 on postcard

Material Handling

A 16-page catalog illustrates a complete line of material-handling equipment, including forklift trucks, stackers, hand trucks, skids, skid platforms, and a wide variety of trucks. (Lewis-Shepard Products, Inc.)

For free copy circle No. 39 on postcard

Clamping Fastener

A data sheet describes a quick-acting, high-strength clamping fastener for assembly of rooms and buildings of flanged-panel construction. Compact, it is easily used in limited space. (Simmons Fastener Corp.)

For free copy circle No. 40 on postcard

Worm Gear Selection

A new catalog provides basic information on worm gearing and basic data needed for accurate selection of worm gear sets. (De Laval Steam Turbine Co.)

For free copy circle No. 41 on postcard

HOW TO MAKE YOUR $'S DEGREASE MORE PARTS

You make no profit on the time you spend cleaning out a degreaser.

You cut another slice off the top of profits whenever you have to add fresh stabilizer to your trichlorethylene bath.

When a bath goes "sour" while you're processing, you lose still more time and money.

psp is the simple answer

Trichlor is trichlor the world over; it's the *stabilizer* in your trichlor that can make the difference.

The difference in Nialk® stabilizer is *psp*—permanent staying power.

Nialk stabilizer is neutral. It cannot react with acids to form corrosive salts. Still it "accepts" acids and renders them completely harmless. The Nialk stabilizer will not stain or discolor your parts or allow your bath to become "sour."

You never add fresh stabilizer to a Nialk bath. The stabilizer stays potent no matter how long you use it. It's insoluble in water so you don't lose it during steam distillation or in the water separator of your degreaser.

Nialk frees your bath of those degradation products which settle on coils and cut down heat transfer. Clean-outs are widely spaced and quickly finished.

If your profit picture could use a little brightening, you'll want to know more about the whole subject of trichlor stabilizers. Send for our Bulletin 70 for the complete story.

HOOKER CHEMICAL CORPORATION
307 Union Street, Niagara Falls, N. Y.

HOOKER CHEMICALS PLASTICS

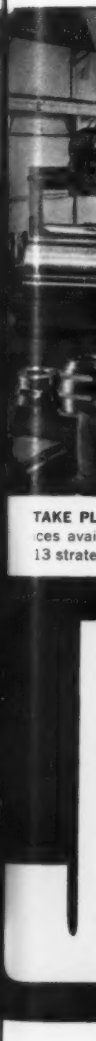
NIALK® CHEMICALS
OLDBURY® CHEMICALS
SHEA® CHEMICALS
DUREZ® PLASTICS

Sales Offices: Chicago, Ill.; Detroit, Mich.; Los Angeles, Calif.; New York, N. Y.; Niagara Falls, N. Y.; Philadelphia, Pa.; Tacoma, Wash.; Worcester, Mass. *In Canada:* Hooker Chemicals Limited, North Vancouver, B. C.

PONTIAC fender, formed in a severe, one-hit drawing operation, is made of J&L drawing quality, cold rolled oiled sheet.

INTERNATIONAL HARVESTER utilizes the strength of J&L steel in rugged earth moving equipment manufactured by Construction Equipment Division.

E. F. HAUSERMAN COMPANY secures uniform flatness from coils of J&L sheet steel for its colorful, versatile movable wall partitions.



TAKE PL
ces avai
13 strate

So easy to form, so flat, so strong, so uniform...

no wonder so many of America's leading manufacturers use

J&L sheet steel

TAKE PLANNED ADVANTAGE of the many services available through J&L Warehouse Division's 13 strategically located Steel Service Centers.

Modern production methods and styling make increasing demands on sheet steel:

It shouldn't deviate in strength or finish—auto makers must double draw steel into sweeping curves and deep contours.

It shouldn't buckle—appliance, office equipment and furniture manufacturers want wide, strong planes that need no bracing.

It shouldn't wear, break or corrode—heavy equipment builders want tough steels that stand the bounce of heavy boulders and the grinding of abrasive gravel.

To provide the steels that meet these requirements, J&L invested nearly $800 million in new equipment and facilities.

These include a new 46-inch, high lift blooming mill—a new automatic oxygen scarfer—a new 80-inch four-high reversing rougher—a new horizontal scale breaker—a new cold reducing mill—a new cold shear line—new annealing furnaces—a new 56-inch temper mill—a new 44-inch hot strip mill.

The result? J&L sheet steels are remarkably ductile, strong, flat—sheet after sheet after sheet.

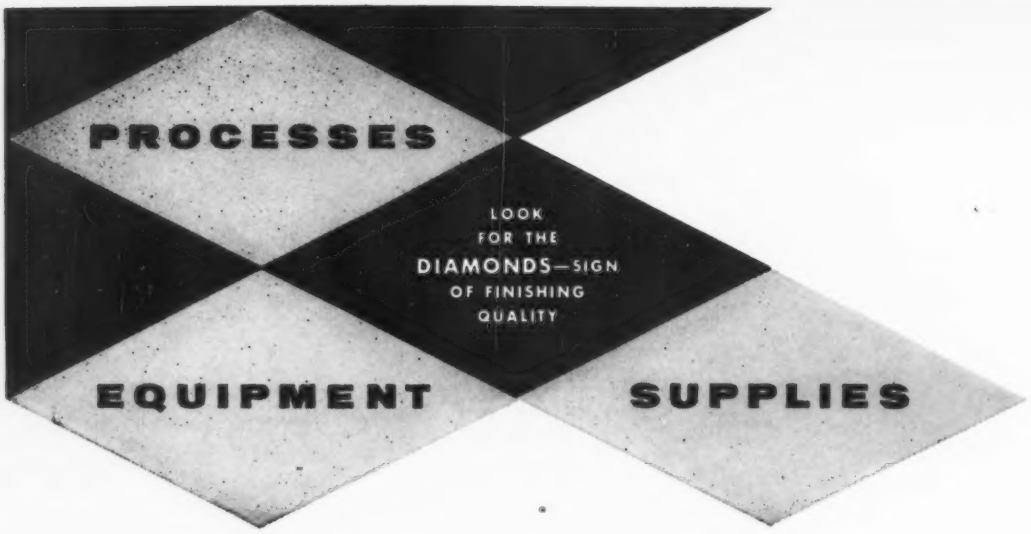
You can see why so many of the things you use and enjoy every day are made of J&L steel.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

RCA WHIRLPOOL is a major user of consistent quality J&L sheet steel in these 24" washers produced in modern Clyde, Ohio, plant.

NOW BEING INTRODUCED by J&L, these colorful, plastic-clad steel containers are made of J&L zinc-coated sheets for patio, utility room or yard.



Now—from Allied Research

—a new systems concept for the finishing of metals.

Process Engineering Service

The first—and only—service built around the most important part of your operations . . . your process requirements.

Why a PROCESS Engineering Service?

Allied Research's long and broad experience in helping customers solve process and equipment problems of all types has led to one important conclusion:

Only by integrating equipment with your particular process are you assured of getting these important benefits from your operations: (1) higher production, (2) greater efficiency, (3) lower operating costs, (4) consistent product quality.

Our success in helping our many customers reach these important objectives has prompted us to offer this unique service to the entire metal finishing industry.

What does our Process Engineering Service consist of?

CONSULTATION—Experienced representatives will assist you in properly planning any part of or all your process and equipment requirements.

RECOMMENDATION—Trained engineers will recommend the particular process, equipment and chemicals to provide you with the best in operating efficiency and economy for your specific production requirements.

INSTALLATION—Planned, engineered and supervised—including plumbing, electrical, ventilation and disposal requirements—or whatever else is needed to assure efficient and proper operations.

SERVICE—Field Engineers insure proper start-up and will make necessary maintenance recommendations. They are available for periodic check-up.

"TURN-KEY" Service—let Allied Research take complete responsibility for laying-out, designing, building, installing and servicing your complete process operations. *Open the door to your plant and start production.*

Get the complete details on Process Engineering Service today. Call your Allied Field Engineer. He's listed under "Plating Supplies and Equipment" in the yellow pages. FREE TECHNICAL DATA FILES on Allied Research processes, equipment and chemicals sent on request.

Allied Research Products, Inc.

4004-06 EAST MONUMENT STREET • BALTIMORE 5, MARYLAND
BRANCH PLANT: 400 MIDLAND AVENUE • DETROIT 3, MICHIGAN
West Coast Licensee for Process Chemicals: L. H. Butcher Co.

Chemical and Electrochemical Processes, Anodes, Rectifiers Equipment, and Supplies for Metal Finishing

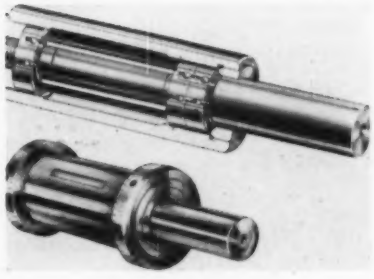
IRIDITE® Chromate Coatings | IRILAC™ Clear Coatings | ISOBRITE® Plating Brighteners | ARP® Chemicals & Supplies | WAGNER Line of Equipment

New Materials and Components

Cartridge-Type Spindles for Special Machines

Cartridge - type precision spindle units are available in 28 models in four diam from 1.250 to 2.750 in. Designed to build up special machines faster at lower cost, they can mount all types of small standard and special cutting tools. They come plain or with 1000th-reading longitudinal positioning nuts for precise adjustment. Five types of spindle nose are available: Morse taper socket, straight bore hole, Jacobs taper nose, arbor-type nose, and blank spindle end. (Russell T. Gilman, Inc.)

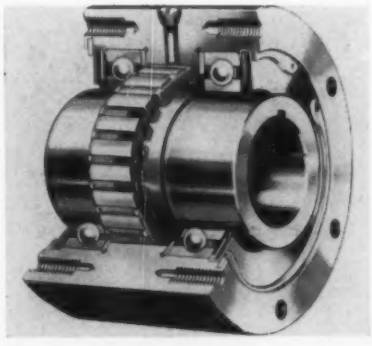
For more data circle No. 42 on postcard, p. 131



Clutch Gives High Torque With No Lost Motion

Two new clutches for super-performance uses are available: an over-running type and an indexing type. New sprag design, free-action operation of all sprags, and retainers insuring coordinated sprag movement, result in positive engagement of every sprag, uniform load distribution over sprags, and greater torque capacity for clutch size. The "free action" also insures minimum drag on sprags during over-running. Higher speeds, less wear, and long life result. The first can provide over-running speeds to 20,000 rpm. The indexing type, on 15° indexing, can operate at 1200 indexes per minute without slip or backlash. (Formsprag Co.)

For more data circle No. 43 on postcard, p. 131



Operates as Automation or Conversion Tool

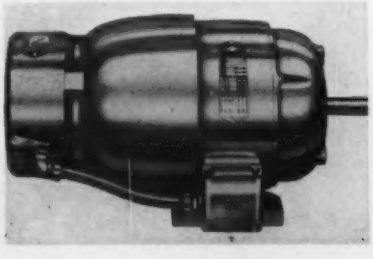
Designed to operate as an automation or conversion tool, a "DMG" (drill-mill-grind) head eliminates the need for several single-purpose tools. A 1½-hp motor provides speeds from 300 to 3000 rpm. As an automation tool, it may be mounted in fixed or building-block concepts to drill, tap, mill, bore, hone, etc. As a conversion unit, it readily mounts on lathes, planers, mills, etc. The spindle has a No. 2 Morse taper. Overall length is 18 in. Spindle has 360° positioning. (Larmet Co.)

For more data circle No. 44 on postcard, p. 131

Motor Has Magnetic Brake and Cooling Fan

A brakemotor has a doughnut-type magnet in the brake, allowing the motor shaft to extend entirely through, thus permitting the same motor to have both a magnetic brake and a cooling fan—totally enclosed and sealed. Aluminum-alloy construction reduces weight and dissipates heat. Motors are available from 1 to 30 hp, in standard squirrel-cage, wound-rotor, or "fluid shaft" types. (Reuland Electric Co.)

For more data circle No. 45 on postcard, p. 131



DESIGN DIGEST

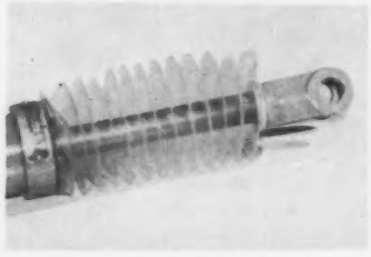
Wear-Resistant Metal

An abrasive-resistant cast metal is available in cleaning stars and grinding balls as well as special applications such as friction bearings and parts for equipment handling abrasive materials. Five- and six-point stars, from 1 to 3 in., are available for cleaning, deburring, and burnishing ferrous and nonferrous metallic castings, forgings and weldments. Grinding balls from ¾ to 1¼ in., for use in burnishing, grinding, or pulverizing metallic ores, minerals, etc., are also available. (Quincy Foundry, Inc.)

For more data circle No. 46 on postcard, p. 131

Plastic Film Boot

A thin-plastic bellows-type boot for protection of reciprocating rods offers several new advantages. Being thin, it will expand easily and not cut down the stroke. It offers complete hermetic sealing against all agents. Because it is translucent,



any oil leakage is trapped and made evident. End connections are normally designed to permit breathing, but it may be fully sealed if a vent line is provided. Low in cost, it is available in a variety of shapes, sizes, and colors. (A. F. Gagne, Associates.)

For more data circle No. 47 on postcard, p. 131

Ferrocolumbium Add

A new exothermic ferrocolumbium alloy packaged in exact amounts and used as a ladle addition in stainless-steel production is reported to be bringing savings of $7 per ton and more. Alloy efficiency of at least 90 pct, and up to 98 pct, results. Consistent high recovery permits closer calculation of alloy additions, and shorter furnace time results, also. Because small additions improve surface and certain other properties, it may also find use in types of stainless and heat-resistant steels where columbium is not specified, and in low-alloy and carbon steels. (Vanadium Corp. of America.)

For more data circle No. 48 on postcard, p. 131

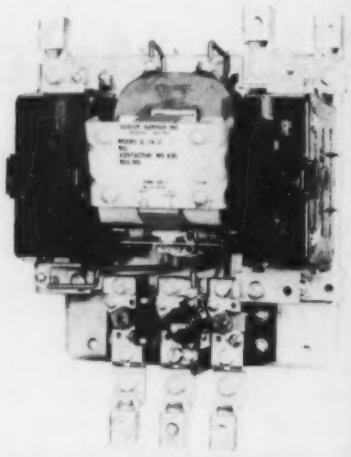
Aerosol Aluminum Wax

A wax to protect and preserve all metal surfaces, including chrome, aluminum, and stainless steel, is being marketed in aerosol form. Not affected by weather or temperature, it penetrates inaccessible places to prevent binding or sticking of metal parts. (American Can Co.)

For more data circle No. 49 on postcard, p. 131

Magnetic Starter

A NEMA size 4 starter has been added to a line of magnetic starters. A new contact structure minimizes contact bounce and provides long life. Parallel double-break contacts using flexible jumpers are

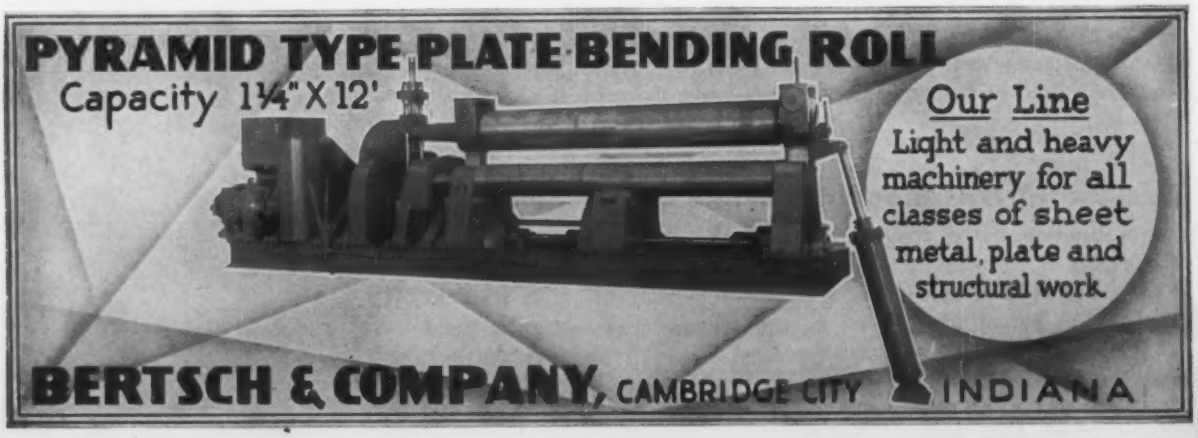


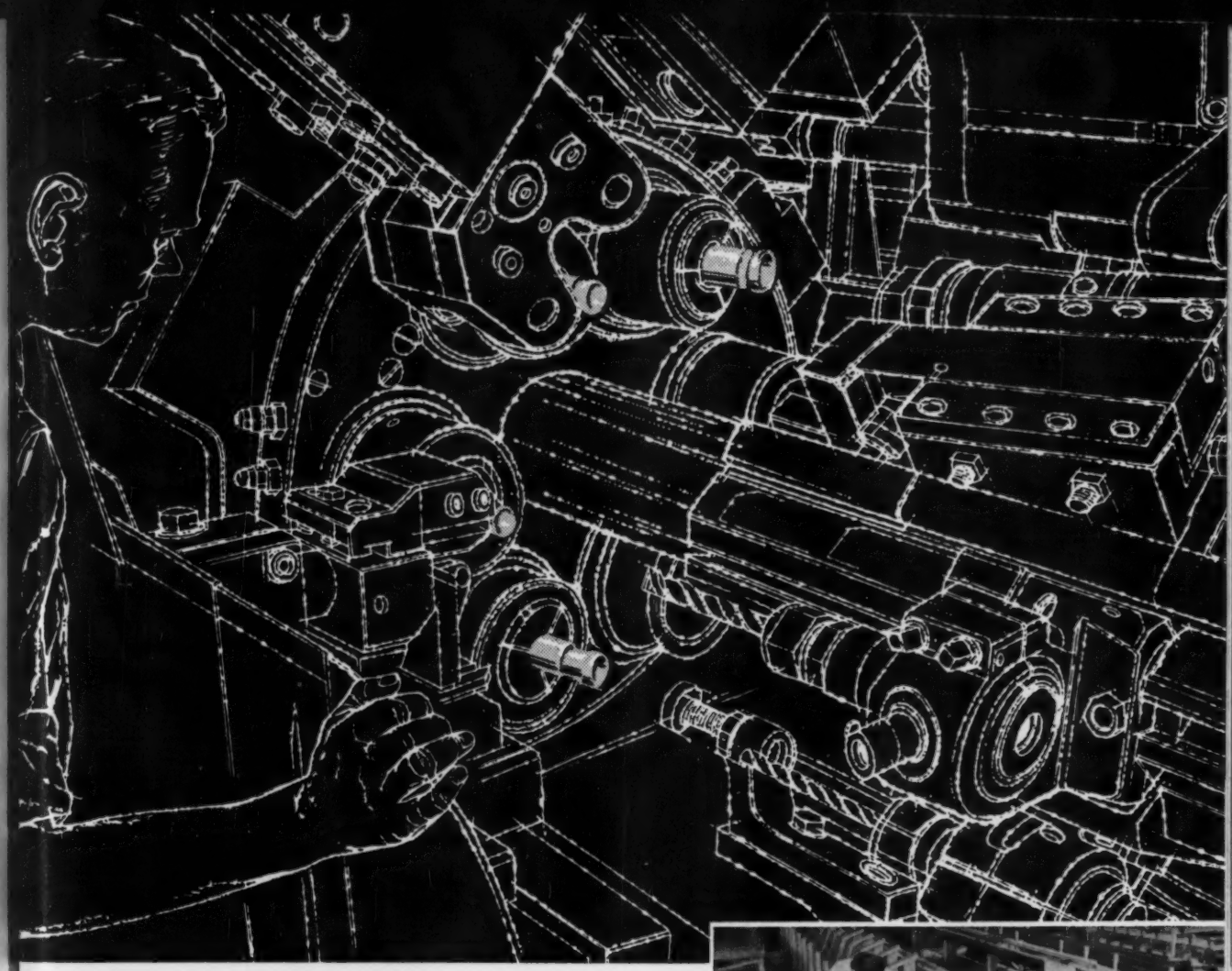
employed. Small and compact, the switch is available in a wide range of NEMA enclosures. (Cutler-Hammer Inc.)

For more data circle No. 50 on postcard, p. 131

Ceramic Hardfacing

A process for hardfacing by spray-welding a ceramic powder has been developed. The sprayed ceramic actually fuses with the parent metal, and will not crack or spall under severe shock, heat, wear, or abrasion. It is so corrosion- and heat-resistant it is used extensively in the jet engine field. It has also found uses on engine valves to stop burning, erosion, "necking," and corrosion. Using the same process to spray-weld other hardfaced alloy powders, a


PYRAMID TYPE PLATE BENDING ROLL
Capacity 1¼" X 12'
Our Line
Light and heavy machinery for all classes of sheet metal, plate and structural work.
BERTSCH & COMPANY, CAMBRIDGE CITY INDIANA



The Ultimate Test

The ultimate test of quality in stainless steel bars takes place in screw machine production, where every bar is literally cut to pieces.

The Perry-Fay Company, Elyria, Ohio, a leader in screw machine production, has been subjecting J&L bars to this demanding production-line test for more than a year, **without a single failure, without a single reject.** Perry-Fay reports: "We consistently get superior surface finish, closer tolerances, fully formed rolled threads with J&L stainless bars."

Whether you need stainless steel bar stock for high-speed, high-production operations, or a single bar for extraordinary requirements, turn to J&L. J&L leads the industry in melt shop standards for stainless steel, the point where quality starts—and new production profits begin.

Careful attention to every production detail is the key to J&L quality.

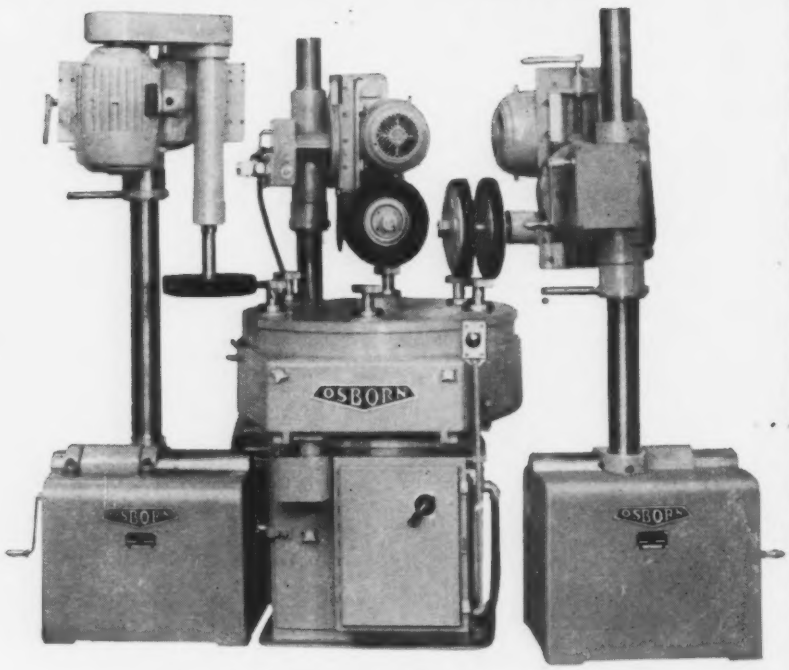
J&L STAINLESS
SHEET • STRIP • BAR • WIRE

Plants and Service Centers:
Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 4606, Detroit 34

Cut your metal finishing costs with this...

NEW OSBORN BRUSHAMATIC® ROTARY INDEX MACHINE



NEW OSBORN BRUSHAMATIC® ROTARY INDEX MACHINE
Units can range from manual to fully automatic operation.

Unique "building block" design means unlimited production flexibility

NEWEST ADDITION to Osborn's broad line of metal finishing machines are these Brushamatic® Rotary Index units. Capability: significant increase of your production capacity.

Most important feature—production men can economically "build" *custom* Brushamatic Machines from *basic "building block"* components . . . brushing heads, index tables and electric controls. Other advanced design and construction features make these new Brushamatic units worth your immediate investigation.

Your Osborn field specialist has latest application data on a wide range of cost-saving finishing methods. And an Osborn Brushing Analysis—made in your plant—is the first step to pinpoint savings on *your* operations. Write for details. *The Osborn Manufacturing Company, Dept. F-85, Cleveland 14, Ohio.*

THE OSBORN MANUFACTURING COMPANY

METAL FINISHING MACHINES...AND FINISHING METHODS
POWER, PAINT AND MAINTENANCE BRUSHES
FOUNDRY PRODUCTION MACHINERY

OSBORN®

DESIGN DIGEST

variety of worn parts can be rebuilt. (Republic Hardfacing Corp.)
For more data circle No. 51 on postcard, p. 131

Urethane Applications

Many applications are foreseen for urethane, a rubber-like synthetic. In cars, cast in a thin layer between two metal sleeves, it creates a driveshaft torsion elastic spring that will transmit full engine torque yet dampen vibration and cushion shock. In fact, in tests the metal broke down before the urethane would shear. Used as a foam, it can fill rubber tires to make them undamageable. Its insulation and waterproofing properties have been dramatically demonstrated by lining Army foxholes with the material. It could be used to build underground warehouses by digging pits and lining the sides and bottoms. (The Dayton Rubber Co.)
For more data circle No. 52 on postcard, p. 131

Novel Pump

Impelling a continuous air-free flow without pulsating or surging, a new pump will pump everything from molten metals to ice cream,

including slurry, concrete, chemicals, sludge, acids, and semi-solids, in 100-pct stainless-steel non-contaminating chambers. It is operated by compressed air introduced into the cylinders in sequence: while left is discharging, center is

Designed to give you *Double Protection!*

WAGNER TYPE DP MOTORS

PROTECTED against corrosion...

PROTECTED against splashing liquids...

Wagner Type DP Motors provide *double protection* that means longer life—more versatility of application. Rugged cast iron frames and endplates are highly resistant to corrosion. Dripproof enclosures are so well designed that these motors can handle many applications that formerly required splashproof motors. These motors pack ample power into little space, are light in weight and are easy to maintain.

SLEEVE BEARING MODELS AVAILABLE. The entire line of ratings is available with ball bearing construction, or with steel-backed, babbitt-lined sleeve bearings of high load carrying capacity that provide quieter operation.

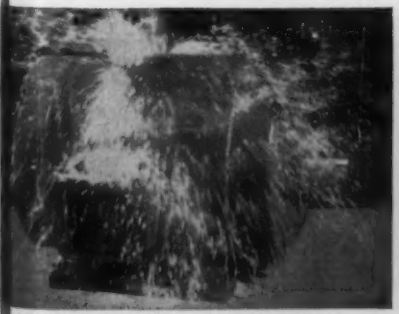
Let a Wagner Sales Engineer show you how these motors can be applied to your needs. Call the nearest branch office or write for Wagner Bulletin MU-223.

Branches and Distributors in All Principal Cities

Wagner Electric Corporation

6403 Plymouth Ave. • St. Louis 14, Missouri

WM59-9



DOUBLY PROTECTED—Air intakes and outlets are positioned to provide complete protection against dripping or splashing liquids. Rugged cast iron frames protect against rough handling and corrosion.

COOLING RUNNING—Specially designed baffles, which protect the stator windings, direct a cooling stream of air through the motor to effectively cool the motor—add to motor life.

CAN BE RE-LUBRICATED—Original factory lubrication will last for years in normal service—but grease plugs are provided to permit re-lubrication that adds years to motor life under severe conditions.

WARD STEEL CO.

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

87B Rindge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.
Branch
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grovehill 6-2600

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

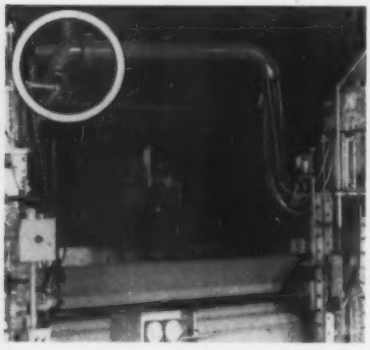
DESIGN DIGEST

waiting and right is filling. Chambers fill by gravity. Operation is automatically controlled. No safety valves are required; upon stoppage the pump stops. Downtime is minimal. It can be furnished in any size desired. (Crossley Machine Co.)

For more data circle No. 53 on postcard, p. 131

Swivels as Conduit

One machine-tool manufacturer successfully employed swivel pipe joints to replace flexible conduit on a giant contour milling machine. Cables and tubes running to three spindles on a traveling overhead cross-rail had to be supported

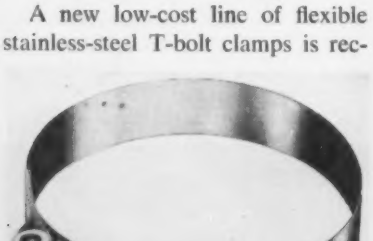


above the work area, and also move back and forth with the rail, and from side to side across it. Heavy pipe was used to house the cables and hoses, and swivel joints were employed at the points where they had to pivot. (Chiksan Co.)

For more data circle No. 54 on postcard, p. 131

T-Bolt Hose Clamps

A new low-cost line of flexible stainless-steel T-bolt clamps is rec-

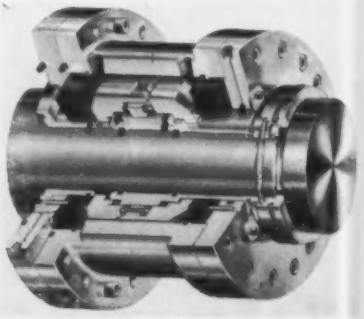


ommended for critical applications on hose and duct connections. Exerting extreme radial clamping pressure uniformly around the circumference, they assure perfect sealing and withstand high internal pressures, severe vibration, corrosion, and high temperatures. (Voss Engineering Co.)

For more data circle No. 55 on postcard, p. 131

Agitator-Shaft Seals

A series of mechanical seals has been developed for use on sealed vessel agitator shafts. Preventing



shaft leakage at pressures up to 3000 psi and serviceable to 700°F, even in corrosive environments, they are available in sizes to fit any shaft. (The Garlock Packing Co.)

For more data circle No. 56 on postcard, p. 131

NEW BOOKS

"Forecasting Price Levels, Income Distribution and Economic Growth," by Prof. Sidney Weintraub, evaluates wage and price trends in relation to other economic factors, and shows that when wages go up in excess of productivity, the price level also goes up. Fully supported by statistics, this book represents a new breakthrough in economic theory. 123 pp. $5 per copy. Chilton Co.

"High Temperature Materials," edited by R. F. Hehemann and G. M. Ault, summarizes current knowledge and recent developments in the field, and discusses all materials for use above 1500°F. 544 pp. $17.50 per copy. John Wiley & Sons, Inc.

Forming this cup in the traditional manner takes five costly and time-consuming operations.

Precise metal forming simplified

PARISH ingenuity speeds production, cuts cost

The same cup . . . produced by Parish . . . takes only 2 operations through cold extrusion.

Even at its new lower cost, the Parish part is more accurate than those produced by the old-fashioned 5-step forming process. The difference is Parish experience and ingenuity . . . the ability to recognize that there's a simpler, faster, cost-cutting way to turn out high quality production in volume.

Look at the benefits! By streamlining this operation from 5 stages down to 2 . . . with the aid of the latest high-impact presses . . . Parish engineers cut the cost and time for tooling, doubled the rate of production, and delivered the parts at a new low price.

Parish facilities, ingenuity and skill may help you cut the cost of large and small parts requiring stamping, machining, heat-treating, welding, balancing and assembly.

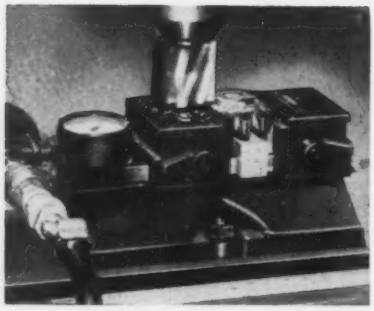
Why not increase your margin of profit by writing Parish today? Your inquiry will receive prompt attention.

● **DANA PRODUCTS:** Transmissions • Universal Joints • Propeller Shafts • Axles • Torque Converters • Gear Boxes • Power Take-offs • Power Take-off Joints • Rail Car Drives • Railway Generator Drives • Stampings • Spicer and Auburn Clutches • Parish Frames • Spicer Frames • Forgings

PARISH PRESSED STEEL

DANA Division of Dana Corporation / Reading, Penna.

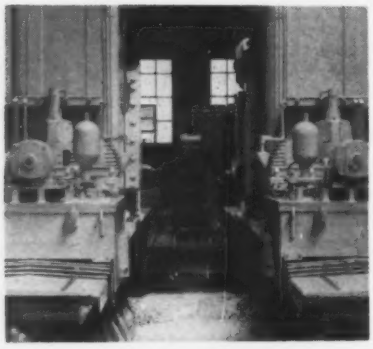
New Equipment and Machinery



"Molds" Grip to Part in Any Machine Tool

A contour grip holding fixture "molds" its grip to any shape by use of two rows of parallel fingers that move in to mold around the part. Doing away with costly special fixtures, it can be actuated hydraulically, pneumatically, or by solenoid, and can be synchronized with operation of any machine tool. After machining of one piece, fingers back off in the same relative position, making it quick and simple to drop in the next piece and tighten up. The operator realigns the fingers before working with a new shape. There are four standard sizes. (E. W. Bliss Co.)

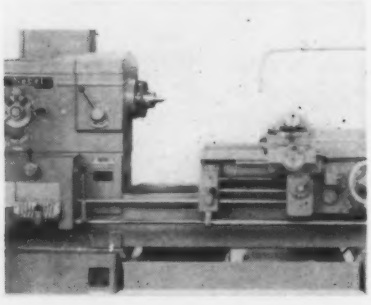
For more data circle No. 70 on postcard, p. 131



Handles Both Ferrous and Nonferrous Metals

This miller mills intricate cavity shapes in both ferrous and nonferrous metals. It has the weight and rigidity to mill high-alloy steels at slow feeds and speeds. A 60-hp motor on each spindle provides from 15 to 3600 rpm, insuring optimum speed for any metal. The two units can operate independently or together under manual or three-dimensional magnetic-tape control. (Either side can be furnished alone as an openside machine.) Milling both sides of a forging, in addition to halving time, has been found to reduce distortion. This precision machine can be built to customer specifications. (Farrel-Birmingham Co., Inc.)

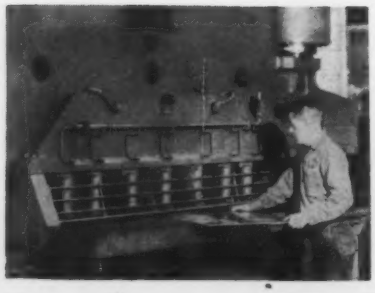
For more data circle No. 71 on postcard, p. 131



Extension-Bed Gap Lathe Swings up to 46 In.

A new heavy-duty extension-bed gap lathe offers precision machining capabilities for a variety of heavy-duty work, with more and higher spindle speeds. It swings 26½ in. over the bedways, or 46 in. through the gap. Center-to-center is 48 in. with gap closed, 84 open. Eighteen speeds up to 1500 rpm are available, plus 60 feeds from 0.0027 to 0.192 ipr, and 60 thread changes from 1 to 72 tpi, including standard pipe threads. Motor is 20 hp. The carriage cross-slide can face full swing capacity in one pass without resetting. (Nebel Machine Tool Corp.)

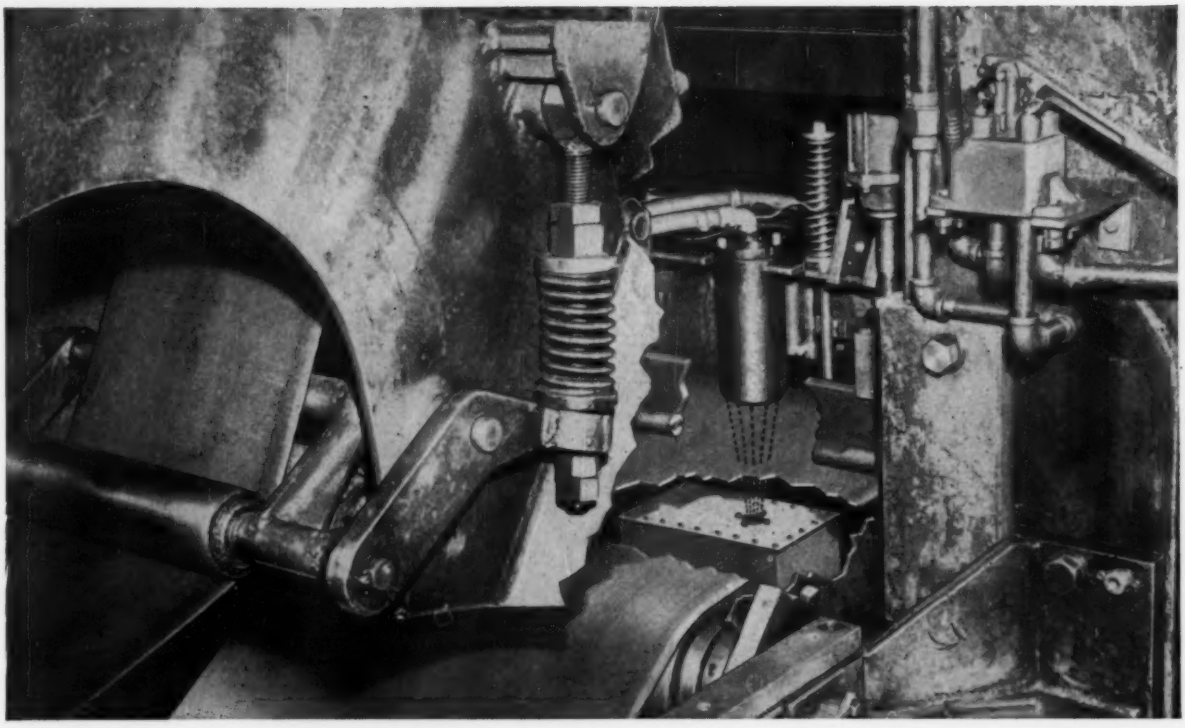
For more data circle No. 72 on postcard, p. 131



Converts Press Brake Into Production Shear

A hydraulic press brake can continuously shear stainless and ½-in. mild steel in lengths up to 72 in. by use of a shearing attachment. Knife clearance can be readily changed. Shockless hydraulic power keeps blades sharp longer than conventional shears. Heavy hydraulic holddowns, also shockless, do not mar soft materials. Requiring less than 30 minutes for removal of press-brake dies and installation of shearing attachment, the machine saves space and costs. (Pacific Industrial Mfg. Co.)

For more data circle No. 73 on postcard, p. 131



Chase replaces pioneer XACTRAY with advanced new models—

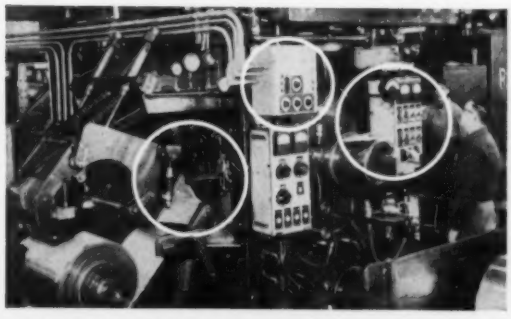
after 10 years' reliable service

Two of the earliest XactRAY non-contact thickness gauges were recently retired from cold rolling mills at the Cleveland, Ohio, plant of Chase Brass and Copper Co., Inc. They were replaced by new XactRAYs—incorporating superior components, such as the low-heat-coefficient Weston Vamistor®, and pulsed X-ray sources . . . greatly reduced in size and total radiation ...which have been developed in the intervening decade.

This replacement by Chase . . . after ten years' experience with Industrial Gauges non-contact measuring systems . . . is characteristic of the high acceptance XactRAY has earned throughout the metals industry.

The cutaway picture, above, shows one of Chase's new XactRAYs—fitted into limited space, deep within the mill. The X-ray source, consisting of the X-ray tube and high voltage coils, is contained in a small sealed case mounted below the strip. The receiver is mounted well above. The accuracy of the gauge is unaffected by vertical movement of the strip, and the wide airgap also facilitates threading.

XactRAY offers absolute thickness indication. And absolute calibration is built into the equipment . . . is unchanging for the life of the equipment.



XactRAY, today, is the most widely used non-contact thickness gauge in the metals industries. It has been proved accurate and convenient — even with varying non-ferrous alloys. XactRAY is being used, for example, for the automatic control of the thickness of coinage strip for all United States coins — which range from silver to copper-nickel, and bronze.

For further information, contact your local Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. *In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.*

DAYSTROM WESTON *Industrial Gauges*

WORLD LEADERS IN MEASUREMENT AND CONTROL

Photograph by Bruce Davidson

THEY CALL JOE BARR "THE ALUMINUM MAN"

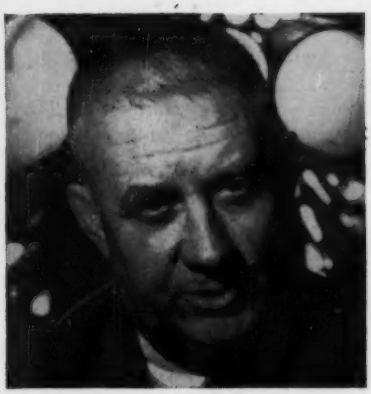
To the 196 customers he serves, Joe Barr is known as "The Aluminum Man." Do they need metal posthaste? In a pinch, he can push through "same-day" delivery. Are they hung up on a problem of fabrication or alloy selection? If he doesn't already have the answer, he can call on Alcoa's matchless technical resources to get it in a hurry.

There are 1,500 Joe Barrs in the 23 independent firms that make up Alcoa's vast distributor network. At their command is an average of 10 years of personal experience with aluminum. Working out of 68 strategically located warehouses, they offer the broadest available line of aluminum to cut your inventory costs as much as 70 per cent. Alcoa's Distributors can trim your fabricating costs, as well, by sawing, shearing and slitting to your order.

Next-door neighbors to industry, they help us put more than 16 ounces of metal into every pound of Alcoa® Aluminum you buy. And they're as easy to reach as your telephone.

Aluminum Company of America, 2018-G Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA ***helps you design it, make it, sell it***



Alcoa has hundreds of Joe Barrs to help you design it, make it, sell it

All of Alcoa's skills are mobilized to a single purpose: To put more than just 16 ounces of metal in every pound of Alcoa Aluminum you buy. Here are 12 of the dozens of ways to do it:

1. Research Leadership, bringing you the very latest in aluminum alloys and applications.

2. Product Development by specialists in your industry and your markets.

3. Process Development Labs for aid in finishing, joining and fabricating.

4. Service Inspectors to help solve production problems at your plant.

5. Quality Control to meet top standards or match your special needs.

6. Complete Line including all commercial forms, alloys, gages, tempers.

7. Availability via the nation's best stocked aluminum distributors.

8. Foremost Library of films and books to help you do more with aluminum.

9. Trained Salesmen with a wealth of on-the-spot information.

10. Sales Administrators constantly on call to service your orders.

11. Year-Round Promotions expanding your old markets, building new ones.

12. The Alcoa Label, leading symbol of quality aluminum, to mark your goods.

Added Values With Alcoa Aluminum

. . . is a case book of Alcoa special services and a guide to their availability in design, manufacture and sales. Your copy, with some of the most rewarding information you may ever read, is waiting and it's FREE. Write: Aluminum Company of America, 2018-G Alcoa Building, Pittsburgh 19, Pa.

NEW EQUIPMENT

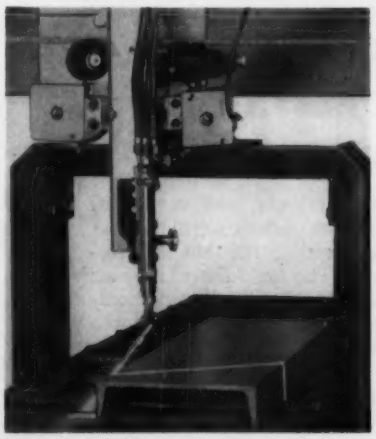
Transfer-Type Driller

A fully automated six-station in-line transfer machine drills and probes holes in truck-engine rocker-arm shafts, 211 parts per hour at 100-pct efficiency. A hopper and escapement mechanism feed parts into the line, where a rotating-finger transfer bar moves them from station to station for various operations. Parts are lifted slightly by spring-loaded centering fingers during transfers. Clamping fixtures at each station locate the parts for the machining and checking operations. The machine shuts down automatically if the probes indicate an incorrect drilling condition. (Snyder Corp.)

For more data circle No. 74 on postcard, p. 131

Structural Cutter

A structural shape cutter reduces handling, layout, and cutting time on shapes such as I-beams, H-

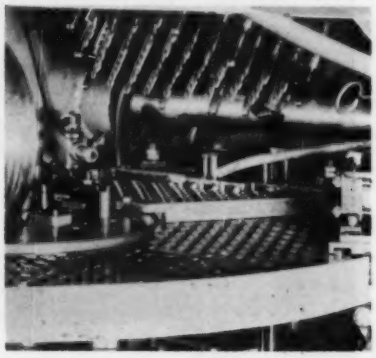


beams, angles, channels, bars, and plates. The shape is easily moved into position on a roller conveyor and locked in place with magnets. Variable-speed motors move the torch straight across or at an angle for a smooth, steady cut. Constant heat is maintained, to reduce slag to a minimum. (Steffan Mfg. Corp.)

For more data circle No. 75 on postcard, p. 131

Production Nut Tapper

Three advantages come with a new nut tapping machine: automatic high production (up to 50,000 per hour) at 100-pct efficiency, flexibility in tooling for 8-32 through 1"-8 threads, and lead-screw head control, with all taps rotating simultaneously. A hopper feeds nuts, which are brushed flush



into the locator plate, agitated to settle firmly, locked, and tapped. Cycle is fully automatic. A 10-hp motor powers the head. Reverse is by heavy-duty electrical reversing clutches. (Zagar, Inc.)

For more data circle No. 76 on postcard, p. 131

Glass-Jet Peener

A machine uses minute pure glass beads in a slurry solution to clean, peen, and finish surfaces. Increasing metal strength and fatigue life, it can produce a 4-microinch finish with no imbedment or alteration of critical dimensions. (Perfecto-Peen, Div. of Aero-Test Equipment Co.)

For more data circle No. 77 on postcard, p. 131

Spinning Wheel Dresser

Featuring a free-spinning wheel, a new-type wheel dresser offers dressing ease, versatility, and control. Its spin-controlled crushing

effect makes it particularly good for use on diamond wheels, as it can

Built by
HEVI-DUTY
specialists in
industrial furnaces

Clean-Line Furnaces Demonstrate The Ultimate in Automatic Heat Treating At Superior Metal Treating Corp.

Superior Metal Treating Corp., Muncie, Indiana, was so pleased with the performance of a Clean-Line furnace under conditions that really test — and prove — heat treating equipment, that they recently installed a second identical furnace. The Hevi-Duty furnaces are used 24 hours a day, 5 days a week for carburizing, carbonitriding and bright hardening. Heating and cooling, or oil quenching, are automatically timed and controlled. The operations are done under protective atmosphere.

The furnaces produce full uniform hardness and depth, even in 500-lb loads of small parts. Heating cycles are as short as 20 minutes, and temperatures range up to 1925° F.

In the original furnace, radiant tubes are still in good condition after a year of use under these demanding conditions. This Clean-Line furnace uses only about 300 CFH of prepared atmosphere, further evidence of its excellent efficiency.

Perhaps this combination of durability and automatically controlled production has a place in your heat treating operation. For full information, write for Bulletin D-100.

- Industrial Furnaces electric and fuel
- Laboratory Furnaces
- Dry Type Transformers
- Constant Current Regulators

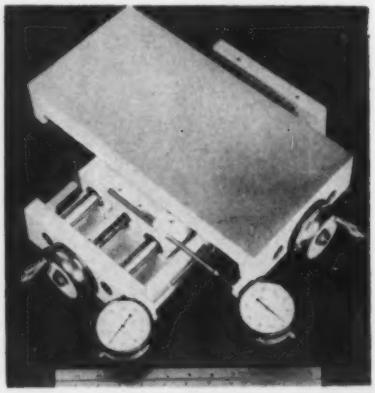
HEVI-DUTY ELECTRIC CO.
Milwaukee 1, Wisconsin

remove bonding material and expose the diamonds without removing them from the wheel. It can form radii or dress wheels to a sharp angle without breaking them down along the edge. Flying chips are held to a minimum. Three wheels are supplied, for diamond, coarse-grit, and fine-grit wheels. (Jarvis Corp.)

For more data circle No. 78 on postcard, p. 131

Two-Way Compound

A new two-way adjusting compound for precision holding and locating of workpieces overcomes the inaccuracies in slide tolerance and backlash in screws and nuts found in conventional dovetail slides. Dial indicators and adjusting rods

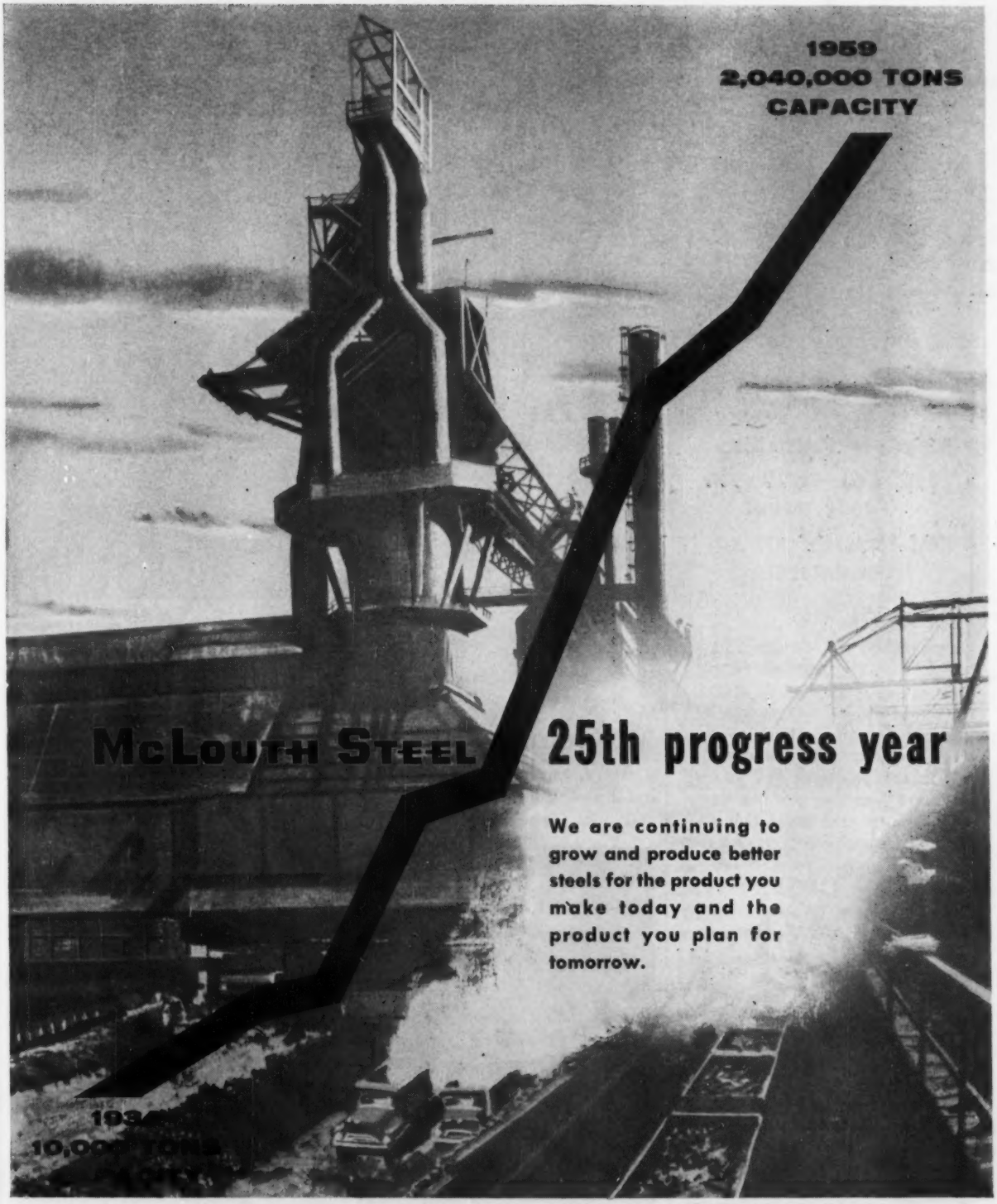


compensate for backlash and allow adjustments to tolerances of 0.0001 in. Adjustable up to 4 in., the slide is mounted on ball bushings with round ways. (Tracer Control Co.)

For more data circle No. 79 on postcard, p. 131

Welding Equipment

Several new additions have been made to a line of machine welding equipment for use with a company's gas-shielded metal-arc process. They include two new heads, two controls, and two machine barrels. The heads use ferrous or nonferrous aluminum and hard wires 0.030 to ⅛ in., with any inert gas. The two control units operate on 230 and 115 v, respectively. The machine barrels, one air-cooled, the other water-cooled, are rated at


1959
2,040,000 TONS
CAPACITY
McLouth Steel
25th progress year
We are continuing to grow and produce better steels for the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation

HOT AND COLD ROLLED SHEET AND STRIP STEELS

Detroit 17, Michigan

Large
or small
INDUSTRIAL
CUT
GEARS

- FURNISHED COMPLETE
- CUSTOM CUT FROM YOUR BLANKS
- HEAT-TREATED, CASE OR FLAME-HARDENED

SIMONDS GEAR produces a complete line of industrial cut gears in a full range of sizes from cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite. Also heat-treated, case or flame-hardened carbon or alloy steel. Or, you may have your own gear blanks custom cut to your order. Same quality . . . same prompt service. Send us your requirements for quotation.

ALSO stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

SPUR GEARS • BEVEL GEARS • MITRE GEARS
WORMS • WORM GEARS
RACKS
PINIONS

SIMONDS GEARS
THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.
Quality Gears for over 65 years

NEW EQUIPMENT

800 amp dc continuous duty cycle. (Air Reduction Co., Inc.)
For more data circle No. 80 on postcard, p. 131

Cutoff Machine

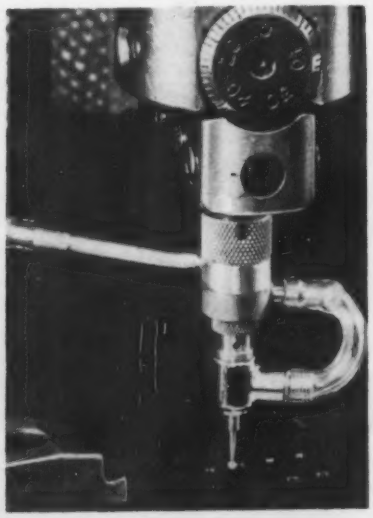
An automatic cutoff machine can combine other operations with cutting off. Using special tooling, parts can also be formed, grooved, flanged, or chamfered in a single operation—at high speed. (Modern Machine Tool Co.)
For more data circle No. 81 on postcard, p. 131

Work Positioner

Heavy, odd-shaped work can be precisely positioned for welding or fabrication on a new work positioner. Its 32-in. table has six milled tee slots for jigs or fixtures. The table tilts 105° in two directions, and will rotate 360° right or left, at from 0 to 4 rpm. It will accommodate up to 2000 lb. (Boesch Mfg. Co.)
For more data circle No. 82 on postcard, p. 131

300,000-rpm Grinder

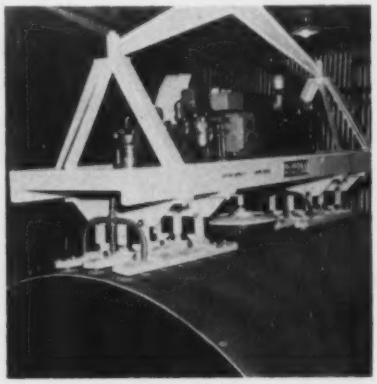
An air-driven cutting and grinding instrument reduces work-time and operates with precision in all



types of materials. Running over 300,000 rpm, it will grind 0.025-in. holes to 0.0001-in. tolerance, and can handle extremely hard materials such as ceramics, glass, carbides, and hard metals with diamond and carbide tools. Small in size, it can work in close quarters, and is adaptable to any machine tool. The high speed dissipates heat, and the burr will not "climb" on any material. (The Ashcombe Co.)
For more data circle No. 83 on postcard, p. 131

Vacuum Lifting Unit

An 8-ft vacuum material-handling unit driven with a gasoline



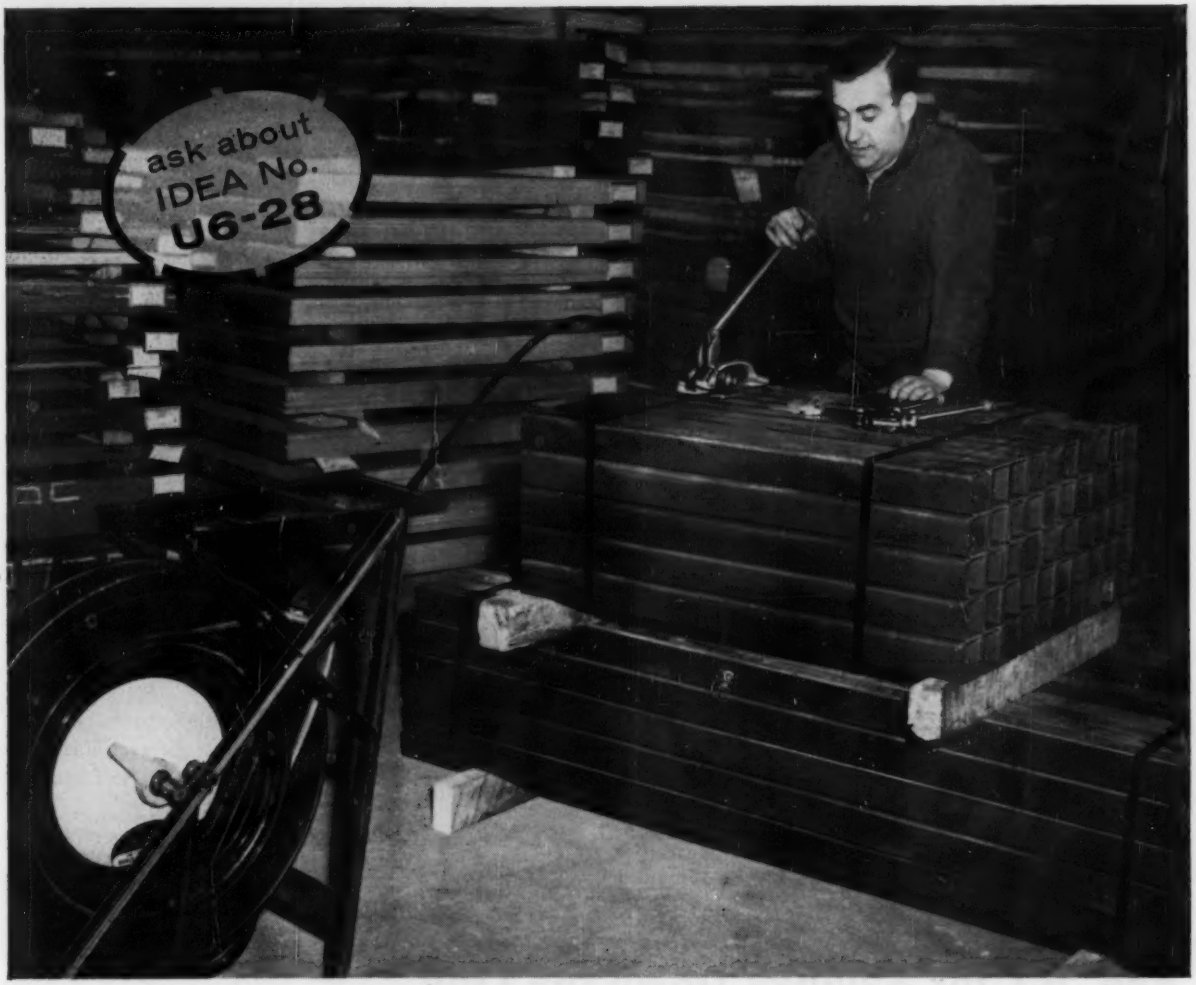
motor or a dc motor can handle domes, half-cylinders, and flat and curved sheets. (Vac-U-Lift Co.)
For more data circle No. 84 on postcard, p. 131

Vibrating Finisher

A vibrating precision finisher operates far faster than tumbling barrels of comparable capacity, and will clean, descale, deburr, radius, fine-finish, color, burnish, or ball-burnish parts of any material. Media, compound, and water are required. The load rotates as a mass, and additional scrubbing action is induced through controlled vibration. The rubber-lined bowl is slightly under 7 cu ft. (Lord Chemical Corp.)
For more data circle No. 85 on postcard, p. 131

Graphite-Tube Furnace

A high-temperature graphite-tube furnace for the metals, ceramics, and petroleum industries provides controlled high temperatures. Overall operating range of 1600° to 5000°F makes it suitable for such uses as sintering of powdered metals, high-temperature investigations and firing of ceramics, and



Work with your AIM* . . . National Metal Fabricators do . . .

Bundling Idea protects formed channels

NATIONAL METAL FABRICATORS, CHICAGO, ILLINOIS, sought a way to package formed channels so that bundles would stay intact, despite severe handling. Their Acme Idea Man recommended bundling them with Acme Steel Strapping. (Idea U6-28)

Bundles remain intact and channels arrived on the job damage-free. Bundles of 50 to 100 channels give increased efficiency in handling and shipping operations. Inventory control is simplified and storage space is more efficiently utilized.

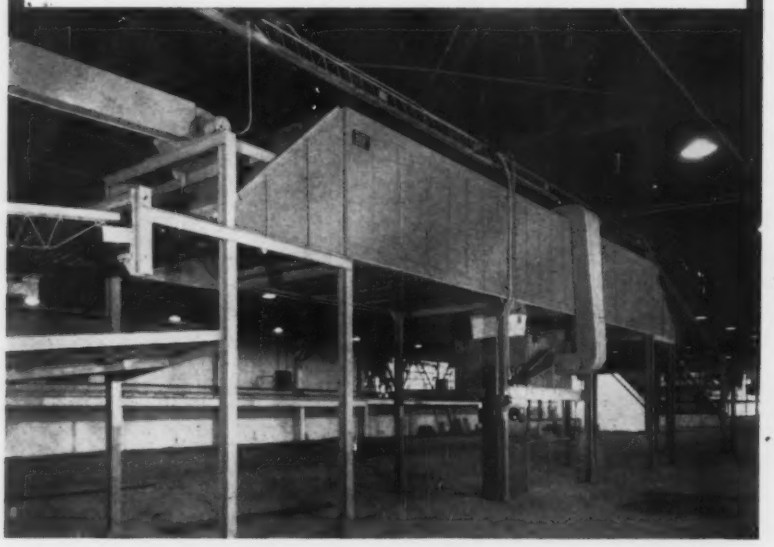
Acme Idea Man Tom Hopfinger helps National Fabricators solve their materials handling problems.

***Work with your Acme Idea Man.** With his help you may be able to find a more profitable shipping and materials handling method. Call him at your nearest Acme Steel Office. Or write Dept. IFU-79, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

SLY INDUSTRIAL OVENS

Heavy Duty for All Needs



Sly Ovens insure better results, greater overall economy through efficient air distribution . . . close temperature control . . . maximum heat utilization . . . time-saving materials handling . . . space-saving installation. Like the "A" type oven pictured, all Sly Ovens are expertly designed and sturdily constructed to meet the particular job requirements. A complete line of conveyorized and batch types for all applications to 800° F.

See SLY for Savings Down the Line

DUST CONTROL SYSTEMS
Unequaled experience in system design plus the most extensive dust filter line. *Dynaclone* and *Automatic-Continuous* for uninterrupted, 24-hour-a-day service. *Intermittent* for non-continuous applications. Plus *"Unit"* and *"Economy"* filters.

INDUSTRIAL OVENS
Conveyorized and batch type for better results and increased savings on all baking, drying, finishing, and aging applications.

ROD BAKERS
Pit type in complete range of sizes. Reduce drying time of lime-coated rods from 30 minutes to 5. Designed to save space and coil handling time.

TUMBLING MILLS
Continuous and batch type. Remove fins as they clean castings — saving hours of machining.

BLAST ROOMS
In all types and sizes, with full mechanical return of abrasives. Thoroughly ventilated. Built to withstand years of heavy use.

PURAIR HELMETS
Complete protection against even the finest dust. Lightweight, comfortable. Maximum visibility, complete freedom of head movement.

UNIFLO NOZZLES
Steel with tungsten carbide orifice lining outlasts hard iron nozzles 200 to 1. For shot, grit and sand blasting.

PLUS . . .
Wear-resistant "Slyblast" hose. "Purair" blower units. Air pressure regulators. Abrasive elevating and cleaning units. Pressure blast tanks. Blast cabinets. Tilted blast mills. Gloves, aprons, canvas suits, leggings.

SINCE 1875 SLY

SEND FOR CATALOG describing complete line.

THE W. W. SLY MANUFACTURING CO.

4730 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

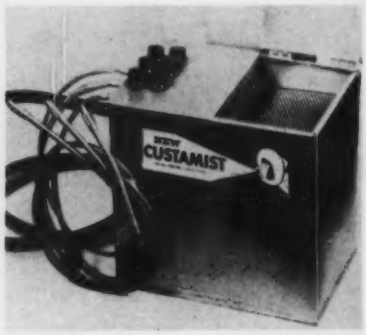
OVERSEAS LICENSEE: ANDREW AIR CONDITIONING LTD., LONDON S.W. 1, ENGLAND

NEW EQUIPMENT

high-temperature chemical reactions. (Lindberg Engineering Co.)
For more data circle No. 86 on postcard, p. 131

Mist Generators

A line of mist coolant systems features separate valve controls for air and lubricant, armored outlet



line covering, and special hooded spray tips. Units are available with 1, 2, 3, or 4 outlets. (The Custanite Corp.)
For more data circle No. 87 on postcard, p. 131

Ear Protector

A new ear protector using lightweight sealing shells mounted on a headphone-type frame is available for personnel who work near loud noises. (Bausch & Lomb Optical Co.)
For more data circle No. 88 on postcard, p. 131

NEW FILMS

"Advanced Welding Techniques" stresses use of the correct electrode for specific jobs, and gives practical aspects of advanced welding techniques. 10 min. 16mm, color, sound. Film Div., Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh 30.

"New Fastening Methods," in fine detail, features the Huckbolt fastener in diverse applications and promotes the assembly-line concept of fastener application. 13 min. 16mm, sound. Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7.

Complex job–or simple job

Kingsburys save money on both

600 valve castings per hour gross with a 14-spindle indexing machine

At the left is high production with a variety of tools — five combination tools, two drills, a hollow mill, a recessing tool for the undercut, a counterbore and three taps.

A 30-inch index table holds seven fixtures. Steel jaws in each fixture hold two parts, one in front for the first chucking and one in back for the second. A spring-loaded ram clamps the parts and an air cylinder unclamps them.

Nine self-contained units perform the operations. Seven have single spindles. Two vertical units have multi-spindle heads; each operates at two stations and in both chuckings.

The machine also handles a part with another tapped hole. The units cycle in 4.5 seconds, and the table indexes in 1.5 seconds, so a part can be finished every 6 seconds.

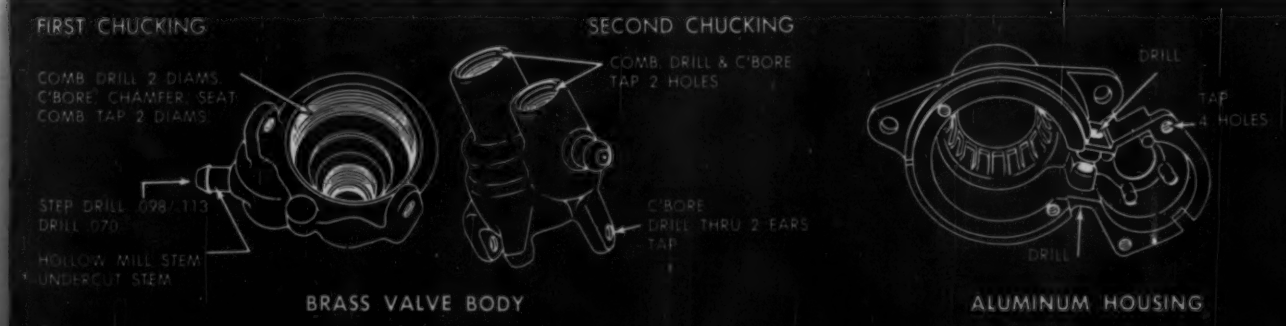
325 aluminum housings per hour gross with a 6-spindle non-index machine

The machine at the right has one fixture. Clamping is manual. Two opposed units drill two holes in line. To avoid tool clash one unit cycles, then a cam-controlled valve trips the other. A vertical unit taps four holes.

Kingsbury machines save money because they produce uniform parts that gage. Good basic design and rugged accurate construction mean few rejects and little down time.

Kingsbury Machine Tool Corporation, Keene, N. H.

KINGSBURY MULTI-UNIT AUTOMATICS



BRASS VALVE BODY

ALUMINUM HOUSING

RYERSON FOR METALWORKING MACHINERY

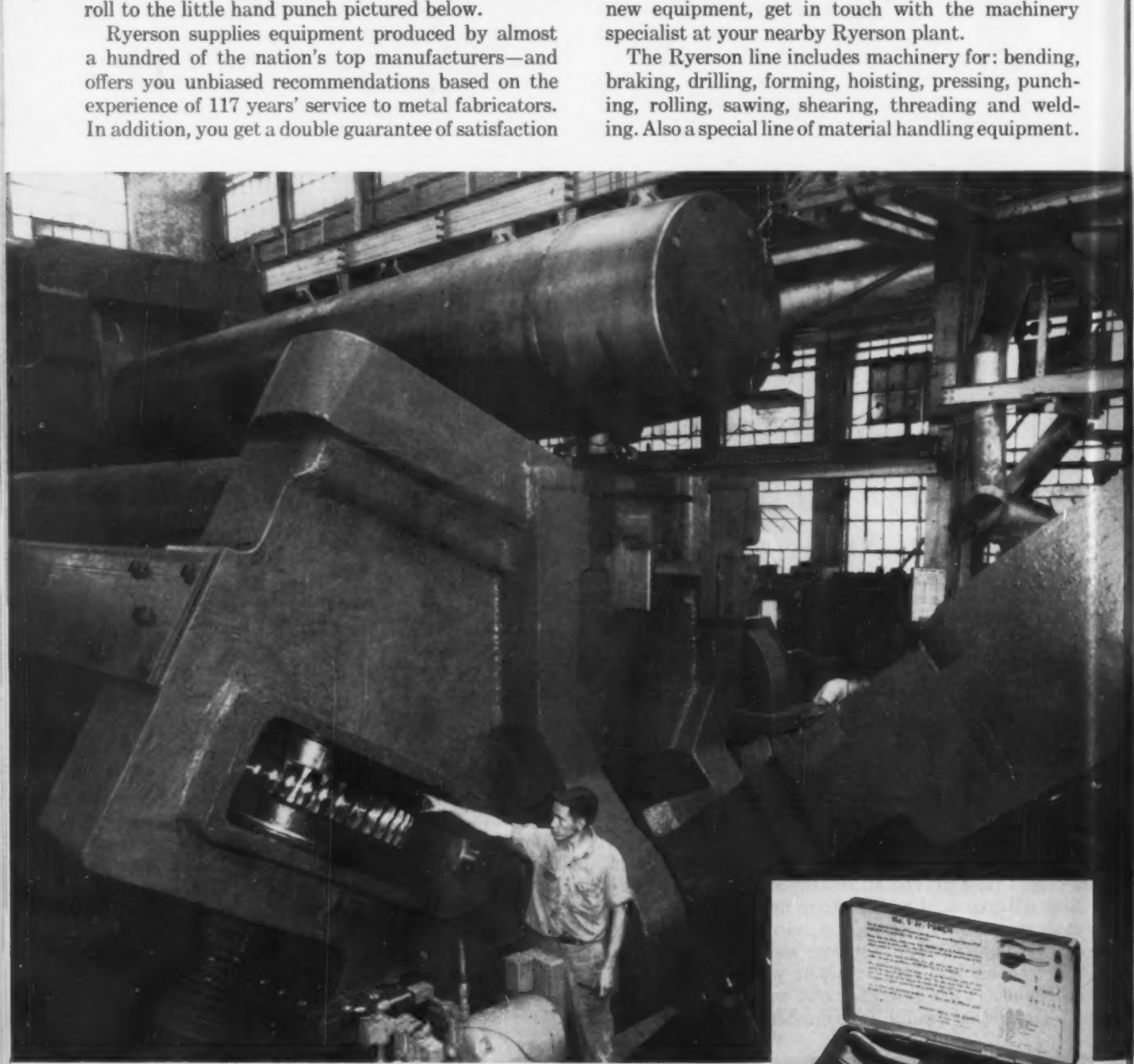
375-ton rolls . . . 7½-lb. punches . . . everything in between

Whatever you need in metalworking machinery Ryerson can supply. Over 3800 types and models are available — everything from this huge bending roll to the little hand punch pictured below.

Ryerson supplies equipment produced by almost a hundred of the nation's top manufacturers—and offers you unbiased recommendations based on the experience of 117 years' service to metal fabricators. In addition, you get a double guarantee of satisfaction and greater continuing interest because of your steel and aluminum buying potential.

So next time you are considering the purchase of new equipment, get in touch with the machinery specialist at your nearby Ryerson plant.

The Ryerson line includes machinery for: bending, braking, drilling, forming, hoisting, pressing, punching, rolling, sawing, shearing, threading and welding. Also a special line of material handling equipment.



MACHINERY DIVISION

RYERSON STEEL®

Member of the INLAND Steel Family

STEEL · ALUMINUM · PLASTICS · METALWORKING MACHINERY

NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

The Iron Age Summary

What About Strike Aftermath?

Mills and users start to fret about post-strike delivery problems.

The longer the strike the more hectic these problems will be. Delivery promises lengthening.

■ Steel mills and their customers are starting to worry about post-strike delivery problems. How serious these problems will be depends on duration of the walkout, now in its third week.

The mills may find themselves facing some delicate decisions as to which customers will receive priority on shipments. Past customer relationships will be a factor.

Post-Strike Deliveries—Customers not yet on mill order books may have a long wait before steel can be delivered to them. For example: In one producing area, mills are quoting 8 to 10 weeks after startup on new orders for sheet and strip, 6 to 8 weeks on hot-rolled bars, September on plate, October on linepipe, September on standard structurals. These delivery promises will worsen in proportion to length of the strike.

It's estimated that steel user inventories are dropping at the rate of 1.5 million tons a week or 5.5 million tons a month. Actual use is running about 7 million tons a month, but this is offset by steel imports and the output of mills not affected by the walkout.

Pressure Points—At the start of the strike, industry had an estimated 24 million tons in stock, which would be enough to last for 100 days were they evenly distributed and in balance. But this is not the case, and some users will be facing trouble in as little as four weeks.

Once the shoe begins to pinch, pressure for a settlement will begin to mount. And the bigger the customers affected the greater the pressure. Still, large users such as automotive and appliance companies are supposed to be in good shape and they are expected to keep hands off until they really begin to hurt. Possible weak link in the chain: Parts suppliers to the big industries.

Uncertainty Grows—Despite the potential scramble for steel in the post-strike period, the mills report there has been no great rush to get on order books as yet. The mills themselves are uncertain as to how they will handle the situation. One large producer is not soliciting fourth quarter business.

There were no signs this week that the strike will be settled soon (see page 158). Both sides were still far apart. The face-to-face meeting early in the week was a step in the right direction. But it will take a while for tempers to cool, and until then there is no real hope for a meeting of minds. The issues are basic, and observers agree that it will take a lot of delicate maneuvering to bring about a settlement. Another big question is whether the walkout can be settled without a steel price increase (page 73).

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 367	Last Week 367	Month Ago 2,223	Year Ago 1,561
Ingot Index (1947-1949=100)	22.9	22.9	138.3	97.2
Operating Rates				
Chicago	5.0	5.0*	88.0	66.0
Pittsburgh	3.0	3.0*	75.5	48.5
Philadelphia	15.0	15.0	79.0	66.0
Valley	10.0	10.0	71.5	46.5
West	0 0	0.0	82.5	67.0
Cleveland	0.0	0.0	54.0	66.0
Detroit	24.0	23.0*	86.0	64.5
Buffalo	0.0	0.0	105.0	39.0
South Ohio River	77.0	78.0*	79.0	42.0
South	12.0	11.0	82.0	52.0
Upper Ohio River	52.0	51.0*	82.0	77.0
St. Louis	76.0	80.0*	95.0	89.0
Aggregate	13.0	13.0	78.5	57.8

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$39.50	$39.50	$38.50	$40.83
No. 2 bundles	$27.00	$27.00	$26.33	$29.50
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.10
Copper, electrolytic	30.00	30.00	31.50	26.50
Lead, St. Louis	11.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	101.75	102.00	103.375	95.50
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Tool and Diemakers Optimistic

Right now Detroit-area tool and die shops are nearing the "in-between" season.

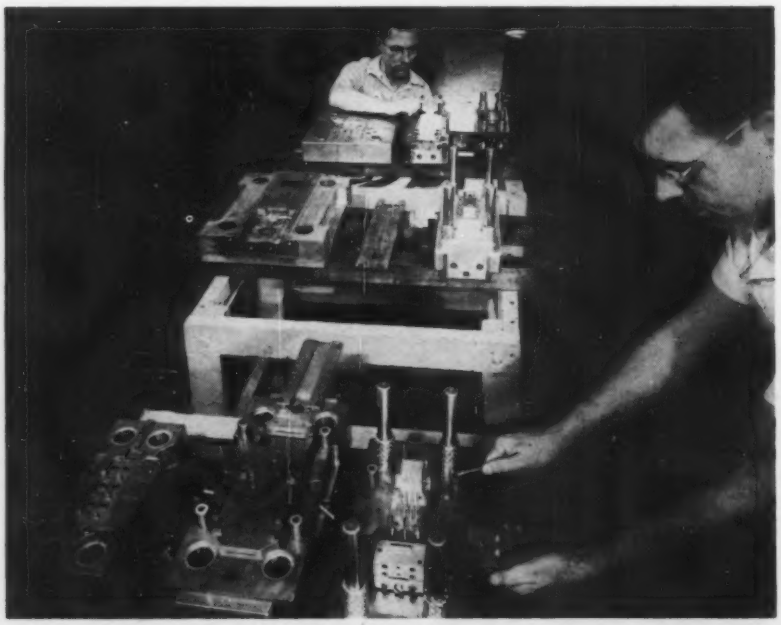
But prospects are good for an active fall with plenty of work from the auto industry.

■ The tool and die industry is approaching the "in between" season, particularly around Detroit. Tool and die programs for 1960 model auto production are in the wind-up phase.

Prospects for the fall, however, are good. Trade talk has it that at least one automaker has large projects slated for release around October. And for the first time in quite a while, the independent shops are expected to be cut-in for a large slice of the business.

Business for All—A representative for some Indiana plants of the auto company is reported to be lining up a million hours in Indiana tool and die shops. Instructions are to "stay out of Detroit." Normally, this could be expected to upset Detroit shops. This time it doesn't. Michigan activities of the auto company "want Detroit for ourselves."

Detroit tool and die shops are anticipating a program that will utilize the area's tool and die capacity fully for the first time in several years—uncommonly lean years. It is estimated that independent T&D shops in the Detroit area have the capacity for about 25 million hours work annually. Shops are hopeful that the October release date, earlier than usual, will hold.



BETTER PROSPECTS: Tool and diemakers are cheered by predictions that business will be brisk after the seasonal letdown this summer.

Around the Country—Generally, the improvement forecast in December by the National Tool & Die Manufacturers Association started showing up in February and is continuing, with only small plus or minus variations, from month to month.

Besides Detroit, other areas have shown above average activity in recent months. The Massachusetts-Connecticut area is one. And a recent jet-engine contract in the area has Connecticut shops hopeful that present levels will be maintained.

South Bend, Inc., with Studebaker-Packard rolling along nicely, has seen T&D activity experience a better-than-average pick-up. It's possible that work quoted in the next few months will show one of the smallest year-to-year price increases in recent years.

Price Problems—A large question mark, of course, is steel. Few, if any, shops can afford to swallow even a mild "non-inflationary" price increase for steel. In the past year or so a lot of work has been done on a profitless basis. The shops don't expect to make up profits they didn't get, but they at least expect to make a normal profit from any new business.

Price Reduction

Lithium Corp. of America has decreased its base price on n-butyllithium to $18.50 a pound for large quantities. Previously small amounts were sold for $50-60 a pound. Commercial-scale production of the chemical begun in June has made the price reduction possible.

RITCO FORGINGS

. . . best by any test!

Measurably greater accuracy has always been a competitive advantage of Ritco "Bright Finish" Forgings. Made to close-tolerance specifications, these flawlessly finished forgings require minimum machining . . . have smooth, accurate surfaces which speed up assembly, save hours of production time and trouble. Their dense, fibrous structure and controlled grain flow concentrate extra strength and toughness at points of greatest shock and stress . . . assure maximum impact resistance and fatigue strength in key parts.

Prove these advantages to yourself by writing now for complete details on Ritco Forgings. Made in a wide range of metals and alloys, and in many designs.

Ritco also offers complete machining facilities and makes Special Fasteners and Upsets of ferrous and non-ferrous metals. Send us your requirements.

1834 ★ 1959 ★ 125th ANNIVERSARY ★

Send us your blueprints now for estimates at no obligation!

RHODE ISLAND TOOL COMPANY

Member Drop Forging Association

144 WEST RIVER STREET • PROVIDENCE 1, R. I.

INTERNATIONAL CLAY MACHINERY CO.
INDUSTRIAL CARS
NOW a division of ERIE ENGINE & MFG. CO.

INTERNATIONAL

To reach more buyers—faster—for less cost, the Industrial Car Division of the INTERNATIONAL Clay Machinery Co. has moved to Erie, Pennsylvania. Now a part of ERIE ENGINE & MFG. CO., INTERNATIONAL'S expansion program will provide even greater service through ERIE ENGINE'S automated production equipment.

Co-operation between buyers, suppliers, and an international network of representatives helped the Industrial Car Division to move to Erie with a minimum of delay in production schedules and "on-time" shipments.

Contact the ERIE ENGINE & MFG. CO. now, where expanded engineering, manufacturing, and service facilities are turning out a full line of INDUSTRIAL cars, KILN cars, CHARGING cars, and INGOT cars.

DISTRICT OFFICES IN PRINCIPAL CITIES

INTERNATIONAL CLAY MACHINERY CO., a division of ERIE ENGINE & MFG. CO., ERIE, PA.

Steel Peace May Be Long Coming

Face-to-face meeting is step in right direction. But both sides are still far apart.

Contract language is the explosive issue as strike starts third week.—By Tom Campbell.

▪ There were no signs this week that the steel strike would be settled soon. Both sides are still far apart. The face-to-face meeting between labor and management early in the week was par for the course. Arranged by chief government negotiator Joseph Finnegan, it was the first joint meeting since the strike began July 14.

Explosive Issue—The explosive issue is new contract language. It may be some time before either side gets to the economic issues. It was certain that had they gotten that far before the strike there would have been no shutdown.

Dave McDonald, union chief, and his negotiating crew profess to be a little confused as to what management wants. This may be because the union knows what is wanted but feels it can't submit to the language the steel firms demand.

The Big Hitch—There are various versions—aside from public handouts by each side—as to what the real hitch is. The IRON AGE, on the basis of interviewing people on both sides, finds somewhat the following:

—The union will not change the so-called local practice clauses where they are part of the contract.

—The steel firms will hold out until they get some new language which will cut down the heavy, expensive trouble and frustration that attend every attempt to change working conditions so they will line up with progressive techniques.

—There is evidence that the steel firms want the complete right to set up crew requirements, make changes in work patterns when new machinery is installed or when old machinery is "updated." This could mean—although steel men deny it—that eventually the steel firms want no grievance machinery with arbitration at all with respect to 2-B and other areas where progress in working practices is desired.

—The union will never give up the right to gripe and send the problems to arbitration. That could be the rock on which a settlement can be wrecked.

White House Calling — All this adds up to the cold fact that if there is any break soon in the steel strike situation it will have to come from the White House. It certainly won't come from "bargaining."

Strike Changes Outlook—Earlier there was a good chance that Dave McDonald would settle for a small moderate wage and fringe package. This is now out.

Thus The IRON AGE believes that the following hurdles stand in the way of an early settlement.

—The cost of living clause will not go back into the contract if the steel companies can prevent it.

—The union if it decided to take a small increase would insist on the cost of living clause.

—Steel firms are still only willing to negotiate a fringe-first-year-moderate-wage-increase-the-second-year package.

—The settlement probably will have to call for a wage boost of less than 10¢ an hour—perhaps closer to 5¢—if it is to be conveniently called "non-inflationry."

Latest on Non-Struck Mills

▪ At the start of the steel strike July 14, mills representing more than 15 pct of industry capacity continued to operate (The IRON AGE, July 23, p 100).

As of early this week, there was no guarantee that some of these mills would be permitted to continue operations. Mills in this doubtful category were, for the most part, those whose contracts were scheduled to expire July 31. Also in the balance were some mills whose contracts had been extended temporarily by agreement with the striking union.

A survey by The IRON AGE turned up these changes from the July 23 listing:

Union Electric Steel Corp., Carnegie, Pa., contract extended. But plant-wide vacation scheduled for first two weeks of August.

Joslyn Stainless Steels, Fort Wayne, Ind., contract extended to Aug. 14.

Continental Steel Corp., Kokomo, Ind., contract extended to Aug. 14.

Pacific States Steel Corp., Niles, Calif., capacity 216,000 tons, indefinite extension.

Atlantic Steel Co., Atlanta, Ga., capacity 400,000 tons, not reported in original listing, open-end contract, no definite expiration date.

Wickwire Brothers, Inc., Cortland, N. Y., expiration date 10/1/59 instead of 7/31/59 as originally reported.

COMPARISON OF PRICES

(Effective July 28, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	July 28 1959	July 21 1959	June 30 1959	July 29 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloys blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	July 28 1959	July 21 1959	June 30 1959	July 29 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.50	$43.50	$43.50	$44.50
No. 1 steel, Phila. area	39.50	39.50	37.50	36.50
No. 1 steel, Chicago	35.50	35.50	34.50	41.50
No. 1 bundles, Detroit	37.50	37.50	36.50	32.50
Low phos., Youngstown	44.50	44.50	43.50	44.50
No. 1 mach'y cast, Pittsburgh	52.50	51.50	51.50	51.50
No. 1 mach'y cast, Phila.	50.50	49.50	49.50	49.50
No. 1 mach'y cast, Chicago	59.50	59.50	58.50	51.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$39.50	$39.50	$38.50	$40.83
No. 2 bundles	27.00	27.00	26.33	29.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$15.38
Foundry coke, prompt	18.50	18.50	18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	31.50	26.50
Copper, Lake, Conn.	30.00	30.00	31.50	26.50
Tin, Straits, N. Y.	101.75†	102.00	103.375	95.50
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance 155
Comparison of Prices 159
Bars 166
Billets, Blooms and Slabs 164
Boiler Tubes 168
Bolts, Nuts, Rivets, Screws 169
Clad Steel 168
Coke 168
Electrical Sheets 168
Electrodes 168
Electroplating Supplies 169
Ferroalloys 171
Iron Ore 169
Merchant Wire Products 168
Metal Powders 169
Nonferrous
- Mill Products 163
- Primary Prices 159-162-163
- Remelted Metals 163
- Scrap 163

Piling 164
Pig Iron 170
Pipe and Tubing 167
Plates 166
Rails 168
Refractories 168
Service Center Prices 169
Shapes 164
Sheets 165
Spring Steel 168
Stainless 170
Steel Scrap 161
Strip 164
Structurals 164
Tinplate 165
Tool Steel 168
Track Supplies 168
Water Pipe Index 169
Wire 166
Wire Rod 165

BOSSERT works wonders with metals!

BOSSERT produces these complex stampings and assemblies...at less cost

You can design with complete freedom of imagination when you plan to use metal stampings for parts or complete assemblies. Intricate shapes can be formed to exact dimensional accuracy in any metal or alloy — often eliminating several separate production operations!

Practical re-design ideas!

Send us your blueprints for evaluation by our engineering department. Parts that are now being cast or forged can often be produced in a single stamping at substantial savings!

Samples of current production

Write for Bulletin B-2. It describes Bossert's complete facilities for producing metal stampings.

ROCKWELL R STANDARD ®

© 1959 R-S Corp.

ROCKWELL-STANDARD CORPORATION
STAMPING DIVISION
1007 OSWEGO STREET UTICA, NEW YORK

Prices Firm Despite Strike Doldrums

Not much openhearth material is moving in the scrap market these days.

Dealers, busy rebuilding inventories, are confident their day is coming.

▪ Scrap movement is bogged down by the steel strike but the market is still strong, psychologically.

Dealer inventories, greatly depleted by the pre-strike buying rush, are still not recovered. Yard intake is slow in most areas. Inventory rebuilding will drag on through the summer.

Contributing to the scarcity of material is the seasonal dropoff in factory lists, reflecting changeover period in the auto industry and vacation shutdowns in other scrap generating industries.

In the port districts, export orders continue to drain good openhearth scrap from dealer yards. It all adds up to a strong frame of mind at the dealer and broker levels.

How well this optimism will hold up if the steel strike drags on beyond Labor Day is another question. By that time, scrap should be backing up in the yards and the urge to sell will be strong.

But for the time being, prices are holding firm and The IRON AGE No. 1 heavy melting Composite Price is unchanged at $39.50.

Pittsburgh—The market here is in a suspended state. Mills on strike have shown no interest in buying dealer scrap for future use. Dealers are taking in material but are not pushing for it. On the other hand, little scrap is being offered to brokers. Auto lists for the next month are small—tonnages running less than half of normal volume. In general, prices are holding with lack of demand balanced by unwillingness to sell. Foundry buying has been steady enough to keep low phos firm at $48.

Chicago — Scrap continues to hold at strong price levels. New factory bundles lists brought on-track prices at the same level or above the sacrifice sales made two weeks ago. General market tone is bullish.

Philadelphia—Prices are firm as export continues strong. Because of the brisk export business, the steel strike is having no weakening effect on prices here. Domestically, small tonnages of low phos 5 ft and 2 ft were sold at $44 and $45 respectively. No. 1 machinery cast is also up $1. Cast grades are moving well but there is no demand for turnings.

New York — Steelmaking prices continue to hold up by virtue of export buying, as do blast furnace grades. Domestic sales are nonexistent in this area. Pipe foundries continue to provide a good market for cast. Stainless is moving at quoted prices.

Detroit — Industrial lists close this week, but only a modest drop in prices is expected at most. Prime steelmaking grades are expected to hold near last month's levels because of seasonal reductions in supply due to changeovers in the auto plants. Turnings are weaker but unchanged. Auto cast is down $3 but other grades are strong at present levels.

Cleveland—Prices are unchanged in Cleveland and Valley markets. Two Valley mills continue to take dealer scrap at quoted prices. One paid $48 for a special industrial grade. In Cleveland itself, activity is limited to shipments of industrial scrap into yards on old orders. Tonnages are down sharply in August auto lists.

St. Louis—Prices are unchanged. There is a strong undertone as mills not on strike continue to drain scrap supplies. Some out-of-area scrap is beginning to find its way into the district.

Birmingham—The market, strong last week, is slipping into the doldrums. Consumers seem to be willing to live in inventories a while. Withdrawal of a major pipe mill from the market is easing the supply of cast.

Cincinnati — Prices of most grades were steady as mills waited for industrial lists before setting dealer programs. Feeling is there will be no great change, up or down. Dealer intake is slow and there is still a need for scrap in the district. Turnings prices are down $2, reflecting the shutdown of a major consumer.

Buffalo — Some small foundry sales have been made at quoted prices. Otherwise, the market has been inactive and prices unchanged. Yard intake is slow.

Boston — Activity is slow but prices are holding firm. There is little export.

West Coast—Prices in Los Angeles, San Francisco, and Seattle are soft. Sentiment is that export alone is not enough to hold prices up. A drop may be coming soon.

Houston — This market is firm although little material is moving. Yard intake is low and one exporter fears he may not be able to find enough scrap to meet commitments.

SCRAP PRICES *(Effective July 28, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	52.00 to 53.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 factory bundles	41.00 to 42.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge corps	50.00 to 51.00
Low phos. punch'gs plate, ¼ in. and heavier	47.00 to 48.00
Low phos. 2 ft and under	45.00 to 46.00
No. 1 RR hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	51.00 to 52.00
Rerolling rails	61.00 to 62.00
Rails 2 ft and under	56.00 to 57.00
Angles and splice bars	52.00 to 53.00
RR steel car axles	66.00 to 67.00
RR couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	59.00 to 60.00
Cupola cast.	52.00 to 53.00
Cast iron wheels	44.00 to 45.00
Malleable	60.00 to 61.00
Stove plate	50.00 to 51.00
Steel car wheels	49.00 to 50.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	34.00 to 36.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	26.00 to 28.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	44.00 to 45.00
Elec. furnace bundles	41.00 to 42.00
Heavy turnings	33.00 to 34.00
RR specialties	44.00 to 45.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	44.00 to 45.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$35.50 to $36.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	44.00 to 45.00
Rails, random length	47.00 to 48.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	46.00 to 47.00
Hvy. breakable cast.	42.00 to 43.00
Drop broken cast.	52.00 to 53.00

Youngstown

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	28.50 to 29.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	44.00 to 45.00

Cleveland

No. 1 hvy. melting	$39.50 to $40.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	39.50 to 40.50
No. 1 factory bundles	45.00 to 46.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	39.50 to 40.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	45.00 to 46.00
Drop forge flashings	39.50 to 40.50
Low phos. punch'gs plate	40.50 to 41.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast.	54.00 to 55.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	19.00 to 20.00
No. 1 RR hvy. melting	40.00 to 41.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	45.00 to 46.00
RR specialties	46.00 to 47.00
Cupola cast.	52.00 to 53.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	57.00 to 58.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar corps and plate	44.00 to 45.00
Structural and plate, 2 ft.	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	46.00 to 47.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	44.00 to 45.00
Rerolling rails	57.00 to 58.00
No. 1 cupola cast	55.00 to 56.00
Stove plate	55.00 to 56.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	9.00 to 10.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	35.00 to 36.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	36.00 to 37.00
Mixed cupola cast.	43.00 to 44.00
Automotive cast.	50.00 to 51.00
Stainless	
18-8 bundles and solids	195.00 to 205.00
18-8 turnings	85.00 to 95.00
430 bundles and solids	85.00 to 95.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	28.00 to 29.00
Machine shop turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	16.00 to 17.00
No. 1 machinery cast.	35.00 to 36.00
Mixed cupola cast.	34.00 to 35.00
Heavy breakable cast.	32.00 to 33.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn.	17.00
Cast iron borings	17.00
No. 1 cupola cast.	47.00

Los Angeles

No. 1 hvy. melting	$38.00 to $40.00
No. 2 hvy. melting	36.00 to 38.00
No. 1 dealer bundles	35.00
No. 2 bundles	18.00 to 20.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Elec. furn. 1 ft and under (foundry)	49.00
No. 1 cupola cast.	45.00

Seattle

No. 1 hvy. melting	$35.00
No. 2 hvy. melting	33.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$32.25
No. 2 hvy. melting	28.25
No. 1 dealer bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Bush., new fact., prep'd.	32.25
Bush., new fact., unprep'd	26.25
Machine shop turn.	14.00
Short steel turn.	17.00
Mixed bor. and turn.	13.00
Rails, rerolling	37.00
Cast scrap	$46.50 to 48.00

Houston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	$34.00
No. 2 hvy. melting	31.00
No. 2 bundles	20.00
Machine shop turn.	16.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$45.00 to 46.00
Unstripped motor blocks	38.50 to 39.50
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	28.00 to 29.00

Aluminum Users Are Covered

There's no panic pending over an aluminum strike.

Fabricators and warehouses have hedged—have 45 to 60 day supply. And there are other sources.

■ A strike by the United Steelworkers of America (representing 50 pct of aluminum workers) against major U. S. aluminum companies would have little effect on aluminum users for 45 to 60 days.

If Aluminum Workers International, the other major aluminum union, stays on the job, as they did when USW struck in 1956, they could keep almost 40 pct of the industry pots bubbling and move the possible squeeze back another 30 days.

On the Spot—However, early this week some sources hinted the pressure was being put on AWI. The union is being sharply criticized for letting other unions bear the brunt of previous strikes while reaping the same benefits. AWI may be forced to take its cue from USW this time to shed the "company dominated" label.

No matter what AWI does, other sources of supply, and some fat inventories, will keep panic out of the situation. Anaconda Aluminum (60,000 tons) and Harvey Aluminum (54,000 tons) will be working.

From Up North — Aluminium Ltd., the major Canadian producer, isn't saying anything officially. But indications are that anyone already on their books will be able to boost his order to make up, at least partially, for a dried up U. S. source.

Foundries and diecasters should have no trouble for a while. Both have solid inventories. And independent ingot makers, who normally supply two-thirds of the casting alloy anyhow, say they can handle more business.

Not All — One ingot maker spokesman cautioned that with scrap leaving the country at an annual rate of about 45 million lb, the ingot makers just couldn't "take over" the business if the major producers were closed down.

Extruders are generally in good shape. They more than any other group of independent fabricators have been using cheaper foreign metal in tight competitive spots. They now have about two months supply and the contacts to get more.

Even the fabricators of wrought aluminum, perhaps the most vulnerable mill product, said as much as a month ago that they were pretty well covered in case of a strike.

The major problem at warehouses is balance. Overall, they have about 60 days' stocks. But sheet and strip is liable to run out before that.

More Imports—Sheet and strip is fast becoming the apple of importers' eyes, however. So while the bind in these items is likely to hit first in the usual domestic sources, any fabricator who really needs it will find fair tonnages of foreign sheet available.

One warehouseman said that he is expecting an aluminum strike. He doesn't expect to be hit very hard for a while. But he says it will be a knock-down, drag-out battle between the aluminum producers citing sagging profit margins, and the union's share-the-wealth approach, with other industry factors strictly secondary.

Automakers Have Plenty — Out in Detroit, the auto companies view an aluminum strike almost casually. For example, the Ford plant using the most aluminum is at Sheffield, Ala. They have been pigging some of the hot metal they have been getting from the neighboring Reynolds Metals plant. Ford figures it has enough aluminum to carry them well into 1960 model production.

Comments from the other companies vary in verbage. But they all add up to, "We were well aware of the critical nature of both steel and aluminum labor talks and adjusted our buying accordingly."

Record—And while the hassle goes on, one fact is drifting by almost unnoticed. Aluminum production in June was a new record.

And when the figures are calculated, buying in July, a traditional vacation month, may well have topped June.

Tin prices for the week: July 22—102.25; July 23—102.00; July 24—101.875; July 27—101.875; July 28—101.75.*

*Estimate

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	30.00	31.50	7/13/59
Copper (CS)	29.50	29.00	7/16/59
Copper (L)	30.00	31.50	7/13/59
Lead, St. L.	11.80	11.30	5/7/59
Lead, N. Y.	12.00	11.50	5/7/59
Magnesium ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	182-182	185-205	11/3/58
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; **Other primary prices, pg. 163.**

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250-3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	⅜-½	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	54.32
Brass, Yellow	47.24	47.78	47.18	50.65
Brass, Low	50.03	50.57	49.97	53.34
Brass, R L	51.02	51.56	50.96	54.33
Brass, Naval	51.90	.....	45.71	55.31
Munts Metal	49.95	.....	45.26	.....
Comm. Bz.	52.55	53.09	52.49	55.61
Mang. Bz.	55.64	.....	49.30	.....
Phos. Bz. 5%	73.92	.....	74.42	.....

Free Cutting Brass Rod 31.81

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.30
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis.. $ 1.31
Cobalt, 97-99% (per lb) ... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... $3.30 to 42.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz.... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $235 to $237
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $18 to $20
Platinum, dollars per troy oz... $77 to $80
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 29.25
No. 120 ..... 28.00
No. 123 ..... 27.00
80-10-10 ingot
No. 305 ..... 33.50
No. 315 ..... 31.50
88-10-2 ingot
No. 210 ..... 42.00
No. 215 ..... 37.75
No. 245 ..... 33.50
Yellow ingot
No. 405 ..... 23.75
Manganese bronze
No. 421 ..... 26.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 25.00-25.25
0.60 copper max. 24.75-25.00
Piston alloys (No. 122 type).. 26.75-27.75
No. 12 alum. (No. 2 grade)... 23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.)... 24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

(Effective July 27, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 24.00-25.00
Grade 2—92-95% 22.75-23.75
Grade 3—90-92% 21.75-22.75
Grade 4—85-90% 21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	19⅝	17¾
Red brass	22⅞	22⅛
Comm. bronze	23⅞	23⅛
Mang. bronze	18⅝	17½
Free cutting rod ends	18¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25½
No. 2 copper wire 24
Light copper 21¾
*Refinery brass 23½
Copper bearing material 22½
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25½
No. 2 copper wire 24
Light copper 21¾
No. 1 composition 20½
No. 1 comp. turnings 20
Hvy. yellow brass solids 14½
Brass pipe 15½
Radiators 16

Aluminum

Mixed old cast. ..... 14 —15
Mixed new clips ..... 16 —17
Mixed turnings, dry ..... 14½—15½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 23 —23½
No. 2 copper wire ..... 21 —21½
Light copper ..... 19 —19½
Auto radiators (unsweated) . 13¼—13¾
No. 1 composition ..... 17½—18
No. 1 composition turnings.. 16 —16½
Cocks and faucets ..... 13½—14
Clean heavy yellow brass ... 12 —12¼
Brass pipe ..... 13½—14
New soft brass clippings .... 14 —14½
No. 1 brass rod turnings .... 11¼—11¾

Aluminum

Alum. pistons and struts .... 7½— 8
Aluminum crankcase ..... 11¼—11¾
1100 (2s) aluminum clippings 15 —15½
Old sheet and utensils ..... 11¼—11¾
Borings and turnings ..... 7 — 7½
Industrial castings ..... 11¼—11¾
2020 (24S) clippings ..... 12½—13

Zinc

New zinc clippings ..... 4¾— 5¼
Old zinc ..... 3¼— 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¾— 2

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 7 — 7¼
Battery plates (dry) ..... 2 — 2¼
Batteries, acid free ..... 1⅞— 2⅛

Miscellaneous

Block tin ..... 77 —78
No. 1 pewter ..... 59 —60
Auto babbitt ..... 40 —41
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 9½—10
Monotype ..... 9½—10
Lino. and stereotype ..... 8½— 9
Electrotype ..... 7 — 7½
Hand picked type shells .... 5¼— 5¾
Lino. and stereo. dross ..... 2¼— 2¾
Electro dross ..... 2¼— 2¾

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective July 27, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R	Hi Str. Low Alloy Galv.		Coke* 1.25-lb. base box	Electro** 0.25-lb. base box	Hollowware Enameling 29 ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb./0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.825 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1*, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.825 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Terrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective July 27, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Conshohocken, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Coatesville, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective July 27, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50								
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50								
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Fontana *K1*	+6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50								
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective July 27, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2

High-carbon chromium.. .955 D-3, D-5
Oil hardened manganese .505 O-2
Special carbon ..... .38 W-1
Extra carbon ..... .38 W-1
Regular carbon ..... .325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅝ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective July 27, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	174	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
Sparrows Pt. *B3***	175	.....	...	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
9/16" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.

Full case or Keg price

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

C. P. Hex, reg. & hvy.

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

Hot Galv. Hex Nuts (All Types)

¾ in. and smaller	41

Semi-finished Hex Nuts

¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished

⅞ in. and smaller	65

Rivets

Base per 100 lb

½ in. and larger	$12.85

Pct. Off List

7/16 in. and smaller	15

Cap Screws

Discount (Packages)

Full Finished H. C. Heat Treat

New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54
¾", ⅞", and 1" diam. x 6" and shorter	38
⅝" diam. and smaller x longer than 6"	..
¾", ⅞", and 1" diam. x longer than 6"	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅜" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	18.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*	.....	.....	.....	.....
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99	.....	.....	.....	.....	.....
Boston**	.10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45*	16.79	16.69	20.29	21.04
Buffalo**	.15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60*	16.34	16.45	19.01	20.80
Chicago**	.15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	16.20	16.10	19.70	20.45
Cincinnati**	.15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.63*	16.52	16.42	20.02	20.77
Cleveland**	.15	8.62[1]	9.61	11.02	10.36	8.76	9.63	9.36	11.40*	16.31	16.21	19.81	20.56
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit**	.15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	15.46	16.38	18.81	21.03
Houston		8.10	8.60	.....	8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**		9.95[1]	11.55	12.20	11.55	10.00	10.00	9.10	14.20	17.30	16.45	21.30	20.80
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee**	.15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	16.34	15.34	19.84	19.09
New York**	.10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35*	16.16	16.50	20.10	20.85
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia**	.10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05*	16.58	16.48	20.08	20.83
Pittsburgh**	.15	8.62	9.61	10.95	10.36	8.52	9.24	8.62	11.40*	16.20	16.10	19.70	20.45
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco**	.10	11.00	11.95[2]	11.50	12.25	11.00	10.95	10.75	15.20	17.05	16.35	21.05	20.60
Seattle**		11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	17.15	17.80	20.65	22.20
Spokane**	.15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.55	22.35
St. Louis**	.15	9.07	10.73	11.02	10.73	9.00	9.76	9.17	11.43	16.58	16.48	20.08	19.33
St. Paul	.15	8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49	.....	15.41	.....	20.83

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—¼" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—⅝-2 15/16; * C 1018—1" rounds.

†† 10¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter.

(Effective July 27, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	31.75 48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

(Effective July 27, 1959)

INDUSTRIAL AND ORNAMENTAL

PERFORATED METALS

DESIGNED AND PRODUCED FOR EVERY PURPOSE

Steel, brass, copper, monel, bronze, aluminum, zinc, tinplate, lead, stainless steel, coated metals, bonded materials, plastics and paper punched as required and for all kinds of screens.

We can guarantee sheets that are perfectly flat, straight parallel on sides, and free from buckle or camber.

A tremendous variety of screens. Our modern tool and machine shop is constantly building new dies placing us in a position to construct special dies as conditions may demand.

Metallurgical and design assistance.

CHARLES MUNDT & SONS
53 FAIRMOUNT AVE. JERSEY CITY 4, N. J.

80 years of experience. Large enough for big jobs, small enough for personal attention.

Write for free catalog

PERFORATION SPECIALISTS OF ALL TYPES OF MATERIALS

IN THE VACUUM MELTING FIELD . . .

LET'S MAKE NO MISTAKE ABOUT IT . . .

QUALITY—the manufacturing or fabrication of vacuum furnaces, vacuum crucibles and ingot molds are not ordinary metal working jobs. Quality depends on . . .
EXPERIENCE—a good product in the vacuum melting field depends on 'know-how' gained through years of experience. Our quality gained by experience gives us . . .
VERSATILITY—to quote on furnaces, crucibles and ingot molds of any design, plus an engineering department able to help in planning.

If you want—
Quality—Experience—Versatility
Call, Troy—ARsenal 3-3912

ZAK MACHINE WORKS INC.
TROY (GREEN ISLAND) N. Y.

A. J. BOYNTON AND CO.
CONSULTING ENGINEERS
109 N. Wabash Ave., Chicago 2, Ill.

GOSS and DE LEEUW
MULTIPLE SPINDLE
CHUCKING MACHINES
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 37.25
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 39.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.29
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Ca, 60-65% Si, 3.00 max. Fe.
Carloads, bulk 24.00
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads, bulk 23.00
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload bulk 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Carloads, bulk, delivered, per lb of briquet 15.10
Briquets, packed pallets, 2000 lb up to carloads 17.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	22.45	21.25
98% Si, 1.0% Fe	21.95	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.
Openhearth 3.20
Crucible 3.30
High speed steel 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective July 27, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 9.85¢
Ton lots ..... 11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 58-62% Cb, 2 in. x D, delivered per pound

Ton lots $3.45
Less ton lots..... 3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy

35-40% del'd, carloads, bulk.. 26.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.

Ton lots per pound ..... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.. $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up

10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight allowed, 100 lb and over

No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3000	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/350
8	1500	New Whse.	Enc. F.V.	525	600
1	1300	G.E.	MCF-12	300	200/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S.	Enc. F.V.	600	800/1000
2	800	G.E.	MCF	250	400/750
2	765	Allis. Ch.	MHC	550	1012/1350
2	750	G.E.	MCF	600	450/900
1	750	G.E.	M.F.	600	120/360
4	600	Whse.		250	275/550
1	500	G.E.	MPC-10	250	188/400
2	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
2	325	Allis Ch.	MHC	250	450/900
1	300	Cr. Wh.	H-102 B.B.	230	1200
1	200	Rel. B.B.	T-664-D.P.	240	850
1	200	Whse.	CB-207-4	250	850/1200
1	150	Cr. Wh.	CMC-65H	230	1150
1	150	G.E.B.B.	TLC-74	250	1150/3500
1	150	G.E.B.B.	CD	600	250/750
1	150	G.E.	CDP-125, B.B.	230	1750
1	150	A.C.	E.V.B.B.	250	450/1200
1	120	G.E.B.B.	TLC-50	250	1950/5000
1	120	Rel. B.B.	1050T	230	575/900
2	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-145	230	1750
1	80	Whse.	SK-123.5	240	2000/4500
1	75	G.E.B.B.	CD-1235-D.P.	600	850
2	60/75	Rel.	1050T	250	350/1050
1	30/40	Whse. B.B.	SK-131, TEFC	250	500/1500
1	25/33	Rel. B.B.	TY563	240	300/1200
1	40	Rel. B.B.	385F, TEFC	230	500/1500
1	30/40	Rel. B.B.	T-564-D.P.	240	300/900

MERCURY ARC RECTIFIERS

3—150 KW, G.E., Sealed Tube—Ignition Unit Substation load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2—150 KW, G.E., Ignitron, 245 V. D.C.—230 V. A.C., air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	Cr.Wh. 4 unit	720	100	2300
1	500	G.E.	900	125/250	440
1	500	G.E.	900	250	2300/4600
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4000
1	300	G.E.	1200	250	440/2300
1	250	G.E.	900	250	440/2300
1	240	Whse.	900	125	220/440
1	200	Whse.	1200	650	2200
1	200	El.Mhy.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	600	125/250	2300
1	100	G.E.	1170	250	220/440
2	100	Cr.Wh.	81160	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
3	1000	G.E.	CA/FA	1	13800 x 230/460
3	833	A.C.	OISC	1	4800/2400 x 480
1	750	Wagner	JPC-16	3	13200 x 480
2	750	G.E.	Pyranol	1	4800x85/55-255/165
3	500	Kuhl	OISC	1	13200 x 6600
6	333	G.E.	HS	1	7200/12470YX 2400/4160Y
3	333	G.E.	OISC	3	2400/4160YX600
3	150	G.E.	OISC	1	3300x2300/4000Y
3	100	G.E.	HS	1	4800/8320Y x 120/240

CRANE & MILL MOTORS

230 V. D. C.

Qu.	H.P.	Make	RPM	Type
12	12/14	Whse.	700/600	MCA-30, Series
1	20	Whse.	975	K-5 Series
2	25	G.E.	650	MDS-408
1	35	Whse.	440	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Sh. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
3	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt. R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AER.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1932 S.B.
6	100-140	Whse.	500/415	MC-90 R.B.

RE-NU-BILT By

BELYEA COMPANY, INC.

47 Howell St. Jersey City 6, N. J.

Tel. OLdfield 3-3334

Sales Remain Strong At Chicago

Used machinery business in that market area didn't fall off seasonally.

Dealers say buyers are active, equipment is moving well, and some price increases are possible soon.

▪ Sales gains continue in the Chicago used machine tool market.

While inquiries seem to be running light, the ratio of sales to inquiries is very strong.

One tool dealer reports a major sale last week in which the buyer had been holding off on the purchase for two years. When he finally decided to buy, he placed the equipment order in a single lot and for quick delivery.

Spot Selling—Another surprising turn: Despite the relatively low level of inquiries Midwestern dealers are receiving through the mails this month, they're encountering a surprising number of buyers who call up or fly in and make a purchase on the spot.

This hasn't happened to any great extent since Korean War Days. The volume of total sales in this area certainly doesn't measure up to some of the boom periods of the past, but it is very good and appears to be rising.

Price Rise? — Certainly prices have retained the strength they had in June. If anything, another round of price increases appears to be in the offing. Rebuilders aren't saying much, but have been watching the price increases on new machine tools with avid interest. Their own costs, they report, are going up. It's probable their prices will do the same within the next thirty days.

Steel Strike Studied—The steel strike has had very little effect on business thus far. One firm, for instance, reports July sales will probably be the highest monthly figure in 1959. Some worry has been expressed over the outlook for third quarter sales if the steel strike continues for more than a month. This may account for the fact that used tool prices haven't tightened more quickly than they have.

But there has been no real indication that buyers are frightened the strike may slow down the general economy.

One dealer comments frankly, "We've even had buyers come in and take out some of our cats and dogs." (These are overage machine tools, usually hard to move in recent months) "They wanted that particular type of tool, they didn't argue about price, and they cut our inventory of that material pretty well."

What's Selling—Press equipment has been moving well. Engine lathes have been sold this month. Rebuilder backlogs are not large, but incoming business levels are strong enough to keep them firm. Light toolroom equipment and sheet metalworking equipment continue to show the fine sales performance they established, in the last quarter.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
10' x 10 Ga. Bertsch No. 6 Initial Type
8' x ½" Bertsch Initial Type
12' x ¼" Bertsch Initial Type
32' x ¾" BALDWIN PYRAMID TYPE—Late

BRAKE—BOX & PAN
8' x ¼" Dreis & Krump, 12" Finger Extension

BRAKES—PRESS TYPE
90 ton Niagara, Model 90-8-10
16' x 10 Ga. Clearing

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton P&H	40' Span 220 Volt D.C.
10 ton P&H	55' Span 230/3/60
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton Milwaukee	56' Span 440/3/60 A.C.
5 ton Aux.	Arr. for Magnet Opr.
30 ton Shaw	70' Span 230 Volt D.C.
120 ton Niles	67' Span 230 Volt D.C.
120 ton Shepard Niles	77' Span 220/3/60 A.C.
15 ton Shepard Niles With 5 ton Auxiliary	55' 6" Span 220/3/60
20 ton P&H With 5 ton Auxiliary	57' 6" Span 220/3/60

DRAW BENCHES
7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINES
Blue Valley Flanging Machine, Capacity ½"

FORGING MACHINES
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING
800 lb. to 12,000 lb. Incl.

HEADERS
#250C Manville Single Stroke Solid Die
#44 Waterbury Farrel Dble. Str. Open Die
⅝" National D8SD, with 1" National Hydr. Straightener and #4 Ajax Hogue Wire Drawer—new 1956

LEVELERS—ROLLERS
24" Torrington 9 Rolls 8" Dia.
50" Youngstown Processor & Leveler, Capy. .109"
60" Guide 17 Rolls 4½" Dia.
72 Leveler 17 Rolls 2⅝" Backed Up

NIBBLER
Pullmax Model 2, Capacity 11/32"

PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton HPM 4-Col. Bed Area 36"x36", Stroke 24"
500 ton Watson Stillman Piercing Press, 48"x 72"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68 x 68", Stroke 40"

PUNCH & SHEAR COMBINATIONS
#2½ Buffalo Ironworker
Style EF Cleveland 42" Throat, Plain Jaw

ROLLING MILLS
3½" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
20" x 36" Single Stand Two High
26" x 60" Single Stand Two High
12" x 32" Birdsboro 3-Hi Bar Mill
22" x 40" Lewis 3-Hi Sheet Mill

ROLLS—PLATE STRAIGHTENING
72" McKay 9 Rolls 15" Dia. Backed-up
92" Hilles & Jones, 6 Rolls 10" Dia.

SCALPING OR BILLET PEELING MACHINE
Medart #6 Size HFBP, Capacity 3½" to 5" Incl.

SHEARS, MISC.
36" Hallden Shear Line Drum Type, Capy. 33-38 Ga.
60" x 10 Ga. Cut-off Line

SHEAR—ROTARY
No. 23A Quickwork Whiting 3/16" Capacity

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x 10 Ga. Wysong & Miles
8" x ⅛" Bertsch

SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4½" Dia.
36" Wean Slitting Line, Arbor 5" Dia.
84" Slitting Line, Arbor Dia. 7"
⅜" Medart Straightening & Cut Off Machine 20 ft. Cut Off

STRAIGHTENER
Torrington #1734 12-Roll, Capy. 1⅝", Rd. 1-9/16"

TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Olsen 3-Screw Beam Type Universal
500,000 lb. Olsen, Super DeLuxe Compression

TUBE REDUCERS
1½" Standard Tube Reducer
2½" Standard Tube Reducer
2½" Tube Reducer for Aluminum

WIRE DRAWING MACHINES
Type B Morgan 4-Block Capy. #5/ Rod down
Scudder 3-Block 20 Dia.
Superior 7-Draft Cone Type Capy. 14 Ga. down

• Manufacturing

A. T. HENRY & COMPANY, INC.

50 CHURCH ST., NEW YORK CITY 8
Telephone COrtlandt 7-3437

Equipment •

Confidential Certified Appraisals
Liquidations — Bona Fide Auction Sales Arranged

Consulting Engineering Service
Surplus Mfg. Equipment Inventories Purchased

LIFTING MAGNETS

A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

Goodman Electric Machinery Co.
1060 Broad St. Newark 2, N. J.

REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

STEEL MILL SPECIALS

(2)—3000-HP Whse. Motors, 600-V.D.C., 600 R.P.M. (in tandem, encl. F.Vent.)
(1)—2200-HP Whse. Motor, 600-V.D.C., 92/132 R.P.M., enclosed, F.Vent.
(4)—700-HP Whse. Motors, 250-V.D.C., 300/700 R.P.M., enclosed, F.Vent.
(2)—645-HP S.S. Motors, 300-V.D.C., 1000 R.P.M., enclosed, F.Vent.
(2)—400-HP Allis-Chalmers Motors, 600-V.D.C., 300/600 R.P.M., mill type.

• • • • •

We can supply suitable Motor Generator Sets with any of the above.

• • • • •

(1) 1875 K.W. Whse. motor generator set 250 V.D.C. with 2700 H.P., motor 13800/6900 V and control.

(1)—2500-HP 296 R.P.M. Allis-Chalmers slip ring motor, 2200-V., 3 ph., 60 cy.
(1)—1800-HP. 252 R.P.M. Whse. slip ring motor, 2300-V., 3 ph., 60 cy.
(3)—1500-HP. 444 R.P.M. General Electric slip ring motors, 6600/4160-V., 3 ph., 60 cy.

★ ★ ★ ★ ★ ★ ★

(1)—1250-KVA Whse. Hi-Cycle Frequency Set, 800-V., 960 cycle with 1875-HP syn. motor, 2300-V., 3 ph., 60 cy. with all switchgear.

T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Cable Address: "Macsteel" Philadelphia, Pa.
Phone: Davenport 4-8300

Keep 'em rolling . . . not rusting

FOR SALE

New—Used—Reconditioned railroad freight cars • car parts • locomotives • tank cars • steel storage tanks.

MARSHALL RAILWAY EQUIPMENT Corporation
328 Connell Building, Scranton 3, Pennsylvania
Diamond 3-1117 Cable MARAILQUIP

IMMEDIATELY AVAILABLE

Because of Mill Consolidation

3 LEE WILSON RECTANGULAR, BELL-TYPE ANNEALING FURNACES,

atmosphere-controlled with 9 bases, are available. Each is approximately 7' x 7' x 14'. Excellent when used for manufacture of steel coils, they have a capacity of 50 tons per charge. These top-grade furnaces are still set up in the plant. Tremendous values specially priced for prompt sale.

NATIONAL MACHINERY EXCHANGE
126 Mott St. New York 13, N. Y.
CAnal 6-2470

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

ENGINE LATHES
12" Sebastian "Viking," m.d.
13"x48" centers Pratt & Whitney, m.d.
14"x31¼" centers Lodge & Shipley, m.d.
14"x32¾" centers Springfield, m.d., taper
14"x33" centers Sidney, m.d.
14"x33¼" centers Lodge & Shipley, m.d.
14"x36" centers LeBlond Geared Head, s.p.d.
14"x36" centers Pratt & Whitney, cone
14"x54" centers LeBlond Regal, m.d.
14½"x60" centers South Bend Precision, m.d.
15"x78" centers LeBlond Regal, m.d.
16"x28¾" centers Hendey Yoke Head, m.d., taper
16"x29½" centers Lodge & Shipley Selective Head, m.d.
16"x29½" centers Monarch Geared Head, m.d.
16"x30" centers Monarch, m.d., taper
16"x30" centers Hendey Geared Head, m.d.
16"x30" centers Reed Prentice, m.d.
16"x102" centers LeBlond H.D., m.d.
18"x30" centers American, m.d., 8 speeds
18"x48" centers Lodge & Shipley, m.d.
18"x49" centers Lodge & Shipley, m.d.
18"x51" centers American Geared Head, m.d.
18"x51" centers Hendey Geared Head, m.d., taper
18"x54" centers American, m.d., Timken
18"x60" centers Cincinnati Tray Top, m.d.
18"x106" centers (110" centers tailstock overhang) American, m.d.
19"x68" centers LeBlond Geared Head, m.d.
20"x46¾" centers Lodge & Shipley, m.d.
20"x48" centers Boye & Emmes, m.d.
20"x55" centers Greaves-Klusman, m.d.
20"x70" centers American, m.d.

MANUFACTURING TYPE MILLING MACHINES
3-24" Cincinnati Plain Hydromatic, m.d. in base
3-36" Cincinnati Duplex Hydromatic, m.d. in base
No. 4-36 Cincinnati Plain Hydromatic, m.d.
Model 33-1536 Sundstand Simplex Fluid Screw Type Rigidmill, m.d.
No. 34-36 Cincinnati Semi-Special Plain Hydromatic, tracer control
28"x144" Cincinnati Plain Hydromatic, m.d., late
56-96 Cincinnati Plain Hydromatic, m.d. in base, 1944
36"x120" Cincinnati Horizontal Hydrotel Miller, pract. new, late

We carry an average stock of 2,000 machines in our 11 acre plant at Cincinnati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio

MElrose 1-1241 CABLE ADDRESS—EMCO

Used Steel Mill Equipment For Sale

BAR & ROD ROLLING MILL

Furnace Equipment: Furnace Parts, Fans, Steel Work, & Burners.

Furnace Approach Table: 48' 5" long, motor driven.

Hot Shears, with motor and controls, depressed table, breakdown approach table.

18", 3 High Breakdown Mill, open top housings, top and bottom screws, driven by a 1500 HP GE, 94 RPM Motor, Pinion Stand & switchgear.

4 Stands, 12", 3 High Merchant Rod Mill, open top, top & bottom screws, 12" mill runout table with motors, 900 HP GE drive motor 209/146 RPM. Runout table 68' long.

12" mill Hot Bed: 160' long Cascade type, Treadwell, complete with transfers, runout table motor operated, run-off table, shears gauge, gag press.
Approximately 1000 extra rolling mill rolls.

Lou F. Kinderman

P. O. BOX 182 NILES, OHIO OLympic 2-9876

WORLD'S LARGEST STOCK
STAMPING PRESSES
SQUARING SHEARS • PRESS BRAKES
REBUILT and GUARANTEED
WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM
JOSEPH HYMAN & SONS
TIOGA, LIVINGSTON & ALMOND STS.
Philadelphia 34, Pa. Phone GArfield 3-8700

FOR SALE
7—Whiting 2 ton Converters
3—Roots Connersville Size 20 x 30 Blowers
1—Roots Connersville 16 x 30 Blower
2—Fairbanks Morse 125 H.P., 880 R.P.M. Motors
4—Whiting 4 ton Ladles
2—Whiting 3 ton Ladles
ADDRESS BOX G-917
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

"FASTER FROM FOSTER"
RAIL
& ALL TRACK EQUIPMENT
Nation's Largest Warehouse Stocks
L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

RAILWAY EQUIPMENT
FOR SALE
Used "As Is" and Reconditioned
RAILWAY CARS
All Types
SERVICE-TESTED
FREIGHT CAR REPAIR PARTS
For All Types of Cars
3—DIESEL-ELECTRIC LOCOMOTIVES
General Electric
44-Ton Standard Gauge
In ICC Operating Condition
STANDARD GAUGE CARS
10 Covered Hopper Cars
70-Ton Capacity
Ore Hopper Cars
660 Cubic Feet
40- AND 50-TON CAPACITY
RAILWAY TANK CARS and STORAGE TANKS
6,000- 8,000- and 10,000-Gallon
Cleaned and Tested
IRON & STEEL PRODUCTS, INC.
General Office
13496 S. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, 51-B E. 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766
"ANYTHING containing IRON or STEEL"

R. R. EQUIPMENT
HOPPER TANK CABOOSES FLATS GONDOLAS BOXES AND SPECIAL DESIGNS
•
WE WILL REBUILD TO YOUR SPECIFICATIONS OR BUILD NEW AS REQUIRED
•
RAIL & INDUSTRIAL EQUIPMENT CO., Inc.
30 CHURCH STREET
NEW YORK 7, N. Y.
PLANT: LANDISVILLE, PA.

36" x 70' OVERALL LEBLOND COMBUSTION OIL FIELD TURNING, THREADING, BORING & TREPANNING LATHE (CAN BE USED AS A 25' CC LATHE)
Bit. 1941. Used in gov. arsenal only. Excel. cond. 16" hole in spdle. 36" chuck, 6" boring bar, 25' max. cap. Two carriages with tapers. 40-30-10-7½-5 HP motors. Replacement value $150,000. Terms. 90 day return guarantee. Price before removal $15,950.
MESTA ALLIGATOR SHEAR 24, cast steel constr., will cut 7" round or 2" x 12" cold soft steel, 15 cuts PM, blades 27" Long, gear driven by 50 HP motor. Excellent condition. Used 1 day a month only.
25/45/50 TON WHITCOMB, PORTER, ATLAS DIESEL ELEC. LOCOMOTIVES: New '40-'41. Used 1 yr. REASONABLE.
25/30/40 Ton Cat. Diesel Orton-Browning-Ohio Locomotive Cranes. 1944, used one year by govt.
12' x 12' x 32' Table Travel Sellers, Dble. Housing Planer. Excellent condition.
48" x 48" x 16' Cincinnati Dble. Housing Planer new '41 w/ 35 HP Vari speed drive & M. Gen. set 50 H.P
EVEREADY-BPT., CONN. Box 638 ED 4-9471-2

COMPRESSORS
America's dominant medium for Compressors—AMERICAN

100 CFM	125 psi	6 x 7 Ing. or Worth.
138 CFM	100 psi	7 x 7 Ing. ES-1
191 CFM	300 psi	9-4¼ x 9 ES-2
234 CFM	100 psi	9 x 9 Ing.—Worth.
268 CFM	500 psi	10-4½ x 10 Ing.
290 CFM	75 psi	10 x 9 Ing. ES-1
311 CFM	1500 psi	10½-7⅛-3½ x 13 Ing. ES-3
485 CFM	100 psi	12 x 11 Ing.
466 CFM	125 psi	11¼-7 x 7 Worth. Y 75 HP
502 CFM	125 psi	12 x 13 Worth. HB
565 CFM	100 psi	15-9¼ x 12 Ing. 3-60-4160
828 CFM	100 psi	14 x 13 Ing. ES
875 CFM	100 psi	15-9½ x 12 Ing. XRB-Worth
870 CFM	125 psi	17-10½ x 12 Ina. XRE 3-60-220
1055 CFM	100 psi	18-11 x 12 Ing. XRE
1545 CFM	110 psi	21-13 x 14 Ing. XRE 250 HP 3-60-220 or 440

1335 CFM Vac 31 x 13 Ing. ES Worth. HB
Portables—Gas-diesel 80"-500'
75 CFM Worth. portables (New) $2275

AMERICAN AIR COMPRESSOR CORP.
DELL AND IRON STREETS
NORTH BERGEN, N. J.
Telephone UNion 5-4848

FOR SALE OR RENT

50 Ton American Diesel Locomotive Crane. New 1944. Caterpillar D-17000 Engine. 15 KW Magnet Generator.

1000 HP Alco Diesel Electric Switcher Locomotives. New 1945. Modern-excellent. ICC Equipped.

44 Ton Gen. Elec. and Whitcomb Diesel Elec. Locomotives. 4 Traction Motors. Heavy Duty.

30 Ton Browning Diesel Loco. Crane

60 Ton Link-Belt K-595 Lifting Crane. 120' Boom. Cat. D-17000 Diesel.

WHISLER EQUIPMENT CO.

1910 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

FOR SALE

METAL FABRICATING SHOP—FULLY EQUIPPED & OPERATING. SPECIALIZING IN CONTROL INSTRUMENT PANELS, CUBICLES, & CUSTOM BUILT EQUIPMENT, ETC. INCLUDES REAL ESTATE. VERY DESIRABLE LOCATION. ASKING $105,000.00. REPLY

BOX G-918
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

ROLL GRINDERS

36" x 240" CINCINNATI
60" x 192" CINCINNATI

Traveling Wheel Head
Filmatic Bearing—Hydraulic Feed
Crowning Attachment—Motors—Controls

IN STOCK

LANG MACHINERY COMPANY, INC.
28th St. & A.V.R.R. PITTSBURGH 22, PA.
GRant 1-3594

WANTED
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

MACHINES FOR YOUR YARD
Allis Chalmers dozer HD-10
Lima Paymaster backhoe
Caterpillar D-7 bulldozer
D-311 caterpillar power unit
Lorain TL-25K ¾ yd. dragline
Terratrac #500 w/backhoe & trailer
TRACTOR & EQUIPMENT CO.
10006 Southwest Highway, Oak Lawn, Ill.

CONTRACT MANUFACTURING

This section appears in the 1st and 3rd issue each month and carries announcements of plants offering specialized experience and facilities for the production of stampings, spinnings, weldments, wire forms, springs, screw machine products, forgings, castings, gears, dies, assemblies, special machinery, and services such as machine work, heat treating, plating, galvanizing, etc.

UNIVERSAL Machinery & Equipment Co.

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

ARC MELTING FURNACES
1— 250# LECTROMELT—300 KVA
1—2000# HEROULT—800 KVA
1—6000# LECTROMELT, Door Charge
1—3 ton SWINDELL Top Charge—Late
DETROIT FURNACES—10 lb. to 3000 lb. Cap.

INDUCTION FURNACES
1—10 KW THERMONIC Tube Type
1—20 KW AJAX Spark Gap 17# Melting
1—50 KW TOCCO w/W.C. motor generator
1—100 KW INDUCTION—Very Late

HEAT TREAT FURNACES
1—4'x4'x10' Gas Fired Box
1—5½"x2"x48" LINDBERG Hydryzing w/shaker feeder
1—10"Hx24"Wx60"L double door 1750°F
1—13"x36"x8" HAYES Hardening 40 KW
1—7' G. E. Rotary Hearth Electric, 1900°F

CLEANING EQUIPMENT AND GRINDERS
1—15x20 WHEELABRATOR
2—27x36 WHEELABRATOR w/loader, 1—Steel Conveyor & 1 Rubber Belt
1—36x42 WHEELABRATOR w/loader
1—48x42 WHEELABRATOR w/loader
1—48x48 WHEELABRATOR w/loader and D/C
1—AMERICAN 2 Ft. Swing Table
2—AMERICAN No. 1-A Multi-Table
1—PANGBORN TABLAST, 6' LK Table
1—PANGBORN TABLAST, 8' Table
1—SAFETY 10 H.P. Swing Grinder
1—WHITING 26"x54" tumbling barrel

. . . SPECIAL . . .

PANGBORN Continuous Pipe Cleaning Machine w/dust collector, handle to 14" O.D. pipe
BYERS Mobile Crane, 50' boom, BUDA Empire Ideal yard crane at very low price
2" cap. GUILLOTINE Bar Shear
10,000# Southwark Hyd. Test. Machine
DILLON Wire Testing Machine
500,000# TINIUS OLSEN Compression Tester
GISHOLT #51A Superfinisher

1630 NORTH NINTH ST. READING, PA. PHONE FRANKLIN 3-5103

CRANES
BOUGHT & SOLD
ENGINEERED TO YOUR REQUIREMENTS
Ornitz Equipment Corp.
Industrial Engineering Service
595 Bergen St. Brooklyn 38, N. Y.
NEvins 8-3566

FOR SALE—CHAIN

118 High Tensile Alloy steel single sling chains, ½" x 16 ft. reach, pear shape ring one end, sling hook on other. Some new, balance factory renovated, all guaranteed by test certificates.

SACRIFICE

The Union Metal Mfg. Company
1432 Maple Ave. N.E., Canton 5, Ohio
Attention: Mr. J. E. Kirk

Newburgh, N. Y., 60 mi. N.Y.C.

FOR LEASE OR SALE
15,000 Sq. Ft. With R.R. Siding

Modern brick and steel industrial building, high ceilings, 225 feet rail siding, 10 ton 40' bridge crane. Heavy 3-phase power busduct distribution. Automatic oil heat. City water and sewer.

Built for structural steel and plate fabrication. Suitable heavy manufacturing or distributing point for heavy goods, particularly those handled by rail. Separate garage storage building 24' x 31'. Separate office building, two story, 1340 square feet. Prompt possession. Brochure. Brokers protected. Owner: J. A. Smith, Jr., 223 Broadway, Newburgh, New York, TEL. 2-4300.

CAST NEW 1937 — 25 CAR SETS

FREIGHT CAR TRUCKS

40-ton Bettendorf U equipped with one-wear, wrought steel wheels.

125 50-ft. Box Cars
All steel, double doors.
42 ft. 50-ton Flat Cars
Just 8. Fishbelly side and center sills.
42 ft. Steel Gondola Cars
Only 5, all steel.
70 ft. 50-ton Flat Cars
Fishbelly center sills.

SALE OR LEASE

MORRISON RAILWAY SUPPLY CORP.
814 Rand Bldg. Buffalo 3, N. Y.

OVER 1,000 NEW AND USED MACHINE TOOLS IN STOCK
WRITE FOR LATEST STOCK LIST

MILES MACHINERY COMPANY
2041 EAST GENESEE • SAGINAW, MICH. PL. 2-3105

DIESEL ELEC. LOCOMOTIVES

3 New 25 Ton, 2 GE, 1 Whitcomb
3— 23 Ton, 2-45 Ton Used Gen Elec.
1— 44 Ton, 1-90 Ton Used Gen Elec.
1—100 Ton, Alcoa Used New 1955
3—100 Ton Gen Motors 600 HP Used
STANHOPE, 60 E. 42nd St., N. Y. 17, N. Y.

EQUIPMENT FOR SALE

1—82,500 C.F.M. INGERSOLL-RAND TURBO BLOWER
Should be good for many years service at 75,000 C.F.M. May be inspected dismantled. Rotor only 4 years old.

2—M. H. TREADWELL CO. 90 TON HOT METAL TRANSFER CARS (NEW)
Electrically equipped, Standard Track Gauge.

2—6' x 7' JEFFREY-TRAYLOR HEAVY DUTY FEEDERS
With Matching 6' x 3½' Heavy Duty Grizzlies (New)

1—4160 MARION ELECTRIC 3 CU. YD. SHOVEL
And many spare parts. Boom only 6 months old. Good condition, except cats. Designed for 4 Cu. Yd. Bucket

Tennessee Coal & Iron Division
United States Steel Corporation
Contact Mr. H. O. Smith — General Office P. O. Box 599 or Telephone State 5-9011, Ext. 4111, Fairfield, Alabama

EQUIPMENT AND MATERIALS WANTED

WANTED TO PURCHASE
Metalworking or fabricating plant
REPLIES CONFIDENTIAL
Mr. W. B. WEISS, President
WEISS STEEL CO., INC.
600 W. Jackson Blvd., Chicago 6, Ill.

SURPLUS STEEL
NEW *WANTED* USED
Structurals, Plate, Pipe and Tubing
Consumers Steel & Supply Co.
P. O. Box 270, RACINE, WISCONSIN

DRAW BENCH
Wanted 250,000# to 300,000# capacity without mandril equipment. Used, but must be in good condition. Advise full particulars.
ADDRESS BOX G-924
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

WANTED
SURPLUS STEEL
WALLACK BROTHERS
7400 S. Damen Ave. Chicago 36, Illinois

OFFERING
BRIDGE CRANES
ARNOLD HUGHES COMPANY
2765 PENOBSCOT BLDG. DETROIT, MICH.
WOodward 1-1894

WANTED
A High frequency Induction Melting Unit for Steel Not less than 250 K.W. capacity
ADDRESS BOX G-920
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

WEISS STEEL CO. INC.
600 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS
Buyers of Surplus Steel Inventories
39 Years of Steel Service

WANTED TO BUY
Aluminum rolling mill, consisting of 2 stands of 2 hi mill units, with 16" diameter x 18" face rolls, mounted on anti-friction bearings. 300 HP per each stand. Variable speed drive.
ALUMINUM & CHEMICAL CORP.
NEWPORT, ARKANSAS
Phone JA 3-2768

WANTED
Cheap Hydraulic Presses over 200 ton, direct from owners, as installed in plants. We qualify for removal. Details by letter to
Covington Machinery & Construction Co.
BOWLING GREEN, KY.

EMPLOYMENT EXCHANGE

HELP WANTED

DESIGN ENGINEER—ROLLING MILLS

A large Canadian industrial firm is presently expanding its interest in this field and requires a highly competent design engineer capable of accepting full responsibility for mill equipment design, ferrous and non-ferrous, but particularly for steel strip, sheet and plate manufacturing and processing.

The successful applicant will be capable of determining equipment requirements by visiting customers' works, working out specifications with operating personnel and technical staff, and able to carry out complete design programs from initial layouts to final details.

Excellent employee benefits. Reply stating full particulars to

BOX G-923, Care THE IRON AGE
Chestnut & 56th Sts., Philadelphia 39, Pa.

JOBBERS WANTED
We Manufacture Kob-Kleen (Ground Corn Cobs) for Deburring, Burnishing, Polishing and Soft Grit Blasting of Metals; Metal Stamping Absorbents, Etc. Nationally Advertised.
COEVAL, INC.
Dept. I, St. Joseph, Illinois

WANTED
Man with experience in manufacture of Boiler Tubes and all tubing referring to same.
ADDRESS BOX G-912
Care *The Iron Age*, Chestnut & 56th Sts., Phila. 39

STEEL MILL PRODUCTION METALLURGISTS

Our Fontana Plant has permanent openings for Production Metallurgists whose qualifications include a minimum of 5 years' experience in flat rolled products —plate—hot strip and tin plate or tubular products—continuous butt weld or electric resistance weld pipe.

College degree preferred for these positions.

Send complete resume including salary requirement to:

Personnel Services Dept.

KAISER STEEL
CORP.
P.O. BOX 217
FONTANA, CALIF.

SITUATION WANTED

CHIEF ESTIMATOR—Sixteen years' experience steel plate, pressure vessel and machinery fabrication. Address Box G-919, Care THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39.

SALES ENGINEER—14 years' experience as a Mechanical Engineer, 7 years' experience selling equipment to steel plants, forge shops, and other metalworking industries. Desires connection with manufacturer of steel mill equipment or materials handling equipment in Middle Atlantic States. Will relocate. Resume and references upon request. Compensation open. Address Box G-922, Care THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39.

ADVERTISERS IN THIS ISSUE

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement.

A

Acme-Newport Steel Co. 123
Acme Steel Co. 151
Aetna-Standard Div. Blaw-Knox Co. 10
*Alemite Div., Stewart-Warner Corp. 39
*Allegheny Ludlum Steel Corp. Carmet Div. 14
*Allied Research Products, Inc... 136
Aluminum Chemical Corp., Aluminum Div. 176
*Aluminum Co. of America...146-147
American Air Compressor Corp.. 174
American Bridge Div. United States Steel Corp. 49
American Gas Association 56
American Smelting & Refining Co. Continuous-Cast Products Dept. 25
American Steel & Wire Div., United States Steel Corp. 19, 20-21, 22
Anaconda Aluminum Co. 40
Ansco Div. General Aniline & Film Corp. 90
*Armco Steel Corp. 6
*Associated Spring Corp. 101

B

Barnes, Wallace Co. Div. Associated Spring Corp. 101
Barnes, Wallace Steel Div., Associated Spring Corp. 101
Barnes-Gibson-Raymond, Inc. Div. Associated Spring Corp... 101
Bay State Abrasive Products Co. 28-29
Belyea Co., Inc. 172
Bertsch & Co. 138
Bethlehem Steel Co. 1
Blaw-Knox Co., Aetna-Standard Div. 10
Blaw-Knox Co., Foundry & Mill Machinery Div. 63
*Bliss, E. W., Co., Rolling Mill Div. ..... Back Cover
Bliss & Laughlin, Inc. 130
Borg-Warner Industrial Cranes.. 105
Boynton, A. J., & Co. 170
Bridgeport Brass Co. 48
Brown-Lipe-Chapin Div., General Motors Corp. 84

C

*Carmet Div. Allegheny Ludlum Steel Corp. 14
Century Electric Co. 103
Chicago Screw Co. 12
*Cleveland Crane & Engineering Co., Steelweld Machinery Div... 64
Coeval, Inc. 176
Columbia-Geneva Steel Div., United States Steel Corp. 19, 20-21, 22, 42-43
Consumers Steel & Supply Co... 176
Continuous-Cast Products Dept. American Smelting & Refining Co. 25
Cooper-Bessemer Corp. 33
*Copperweld Steel Co. Aristoloy Steel Div. .....Inside Front Cover
Covington Machinery & Const. Co. 176
*Crucible Steel Co. of America 46-47, 65

D

Delta Power Tool Div., Rockwell Mfg. Co. 178
*Dreis & Krump Mfg. Co. 15
Dunbar Bros. Co. Div. Associated Spring Corp. 101

E

Eastern Machinery Co., The 173
Eveready Supply Co. 174

F

Foster, L. B., Company 174
Foundry & Mill Machinery Div., Blaw-Knox Co. 63

G

General Aniline & Film Corp.... 90
*General Electric Co., ...23-24, 50-51
Gibson, Wm. D. Co., Div. Associated Spring Corp. 101
*Gisholt Machine Co. 68
Goodman Electric Machinery Co. 173
Goss & DeLeeuw Machine Co... 170
Great Lakes Steel Corp. 30-31
*Gulf Oil Corp. 60-61

H

Hartford Machine Screw Co.... 12
Henry, A. T. & Company, Inc.... 173
*Hevi-Duty Electric Co. 148
*Hooker Chemical Corp. 133
*Hoover Ball & Bearing Co. ... 41
Hughes, Arnold Co. 175-176
Hyman, Joseph & Sons 174

I

International Clay Machinery Co. Div. Erie Engine & Mfg. Co. .. 157
*International Nickel Co., Inc... 59
Interprovincial Steel Corp. Ltd. 177
Iron & Steel Products, Inc. 174
*Irving Subway Grating Co., Inc. 126

J

Jones & Laughlin Steel Corp. 134-135
Jones & Laughlin Steel Corp., Stainless & Strip Div. 139

K

Kaiser Steel Corp. 176
Kinderman, Lou, F. 174
Kingsbury Machine Tool Corp... 153

L

Lamson & Sessions Co. 5
Lang Machinery Co., Inc. 175
*LeBlond R. K. Machine Tool Co. 94
Lilly, Eli & Company 66-67
*Link-Belt Co. 32
*Lodge & Shipley Co. 4
Lucas Machine Div., New Britain Machine Co. 81-82

M

McLouth Steel Corp. 149
MacCabe, T. B. Co. 173
*Magnus Chemical Co., Inc. ... 127
Marshall Railway Equip. Corp. 173
Metallurgical Products Dept. of General Electric Co. 44
Miles Machinery Co. 175
Moltrup Steel Products Co. 178
Morrison Railway Supply Corp... 175
*Mundt, Chas. & Sons 170

N

National Automatic Tool Co., Inc. 17-18
National Machinery Exchange... 173
*National-Standard Co. 26-27
National Steel Corp. 30-31
National Tube Div., United States Steel Corp. 42-43
New Britain Machine Co., Lucas Machine Div. 81-82
*New Jersey Zinc Co. 89
Niagara Blower Co. 100
Norton Co., Abrasive Grinding Wheel Div. 36-37

O

Ohio Steel Foundry Co. 98
Olin Mathieson Chemical Corp. Metals Div. 124-125
Ornitz Equipment Corp. 175
Osborn Mfg. Co., Brush Div..... 140

P

Parish Pressed Steel Div. Dana Corp. 143
Penn Metal Co., Inc. 62
*Pennsylvania Flexible Metallic Tubing Co., Inc. 13

R

Rail & Industrial Equip. Co., Inc. 174
Raymond Manufacturing Co., Div. Associated Spring Corp. 101
Reliance Electric & Engineering Co. .....Inside Back Cover
*Republic Steel Corp. 106-107
Reynolds Metals Co. 92
Rhode Island Tool Co. 157
Rockwell Manufacturing Co., Delta Power Tool Div. 178
*Rockwell-Standard Corp. Stamping Div. 159
Roebling's, John A. Sons Corp. 57
Ryerson, Jos. T. & Son, Inc., Machinery Div. 154

S

SKF Industries, Inc. 8
*Sandusky Foundry & Machine Co. 69
Sciaky Bros. Inc. 58
*Selas Corp. of America 34-35
*Shenango Furnace Co. 104
Signode Steel Strapping Co. ... 86
*Simonds Gear & Manufacturing Co. 150
*Sly W. W. Manufacturing Co. 152
Smith, A. J. 175
*Somers Brass Co., Inc. 11
Stamco, Inc. 102
Stanhope, R. C., Inc. 175
*Standard Oil Co. (Indiana).... 45
Standard Pressed Steel Co. 108
Standard Screw Co. 12
Steel Equipment Co. 97
Steel & Tube Div., Timken Roller Bearing Co. 72
*Steelweld Div., Cleveland Crane & Engineering Co. 64

T

Tennessee Coal & Iron Div., United States Steel Corp. 19, 20-21, 22, 175
Timken Roller Bearing Co., Steel & Tube Div. 72
Tractor & Equipment Co. 175
*Trent Tube Co. Subsidiary of Crucible Steel Co. of America 65

U

Union Metal Mfg. Co., The ... 175
*United Air Lines 54
United States Steel Corp. 19, 20-21, 22, 42-43, 49, 52-53, 175
United States Steel Export Co. 19, 20-21, 22, 42-43, 49
*United States Steel Supply Div., U. S. Steel Corp. 52-53
United States Steel Supply—Steel Service Centers Div. United States Steel Corp. 19, 20-21, 22
Universal-Cyclops Steel Corp.... 129
Universal Machinery & Equipment Co. 175

W

*Wagner Electric Corp. 141
*Wales-Strippit Div. Houdaille Industries, Inc. 128
Wallack Bros. 176
Ward Steel Co. 142
*Ward Thomas W., Ltd. 38
Weiss Steel Co., Inc. 176
Western Automatic Machine Screw Co. 12
Weston Instruments Div. Daystrom, Inc. 145
Wheland Co. 142
Whisler Equipment Co. 175
Whitehead Metals, Inc. 70
Wyckoff Steel Co. 16

Y

Youngstown Foundry & Machine Co. 55

Z

Zak Machine Works, Inc. 170

CLASSIFIED SECTION

Clearing House 172-175
Contract Manufacturing Appears in first and third issue of each month. See July 2 and July 16
Employment Exchange 176
Equipment & Matrials Wanted... 176

STEEL WORKERS WANTED

A new, independent 100,000 tons per year hot strip, plate and structural steel mill is being built in Regina, Canada. Full personnel is required for start-up in January, 1960. Openings are available in all phases of steel making. All interested parties should give full particulars, salary expected, etc., on first writing.

Interprovincial Steel Corporation Ltd.

Regina, Saskatchewan, Canada

Moltrup Steel

COLD DRAWN

Special SHAPES

Save Time—Cut Cost

Order the exact shapes needed. Any special shape—as well as all standard shapes—drawn to the exceptionally close tolerances that have made MOLTRUP the quality name in steel for over 65 years.

Prompt Delivery...

Your order or request for quotation will receive immediate attention. Please include blueprint and specification of special shape or shapes desired. Shipments direct from our plant.

Precision Products...

Cold Drawn Carbon, Alloy, and Leaded Steels—Screw Stock—Key Stock—Turned and Polished Shafting—Machine Keys—Pins—Flattened, Ground and Polished Plates—Foundry Pattern, Core and Bottom Plates.

Consult telephone directory, in cities listed, or ask us for name of distributor nearest you.

Phone: TIlden 6-3100

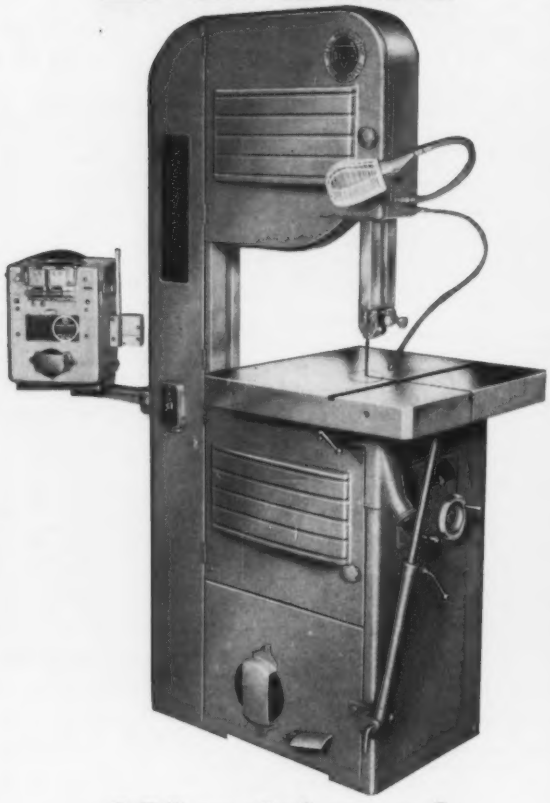
Moltrup *Steel Products Co.*

BEAVER FALLS, PA.

Pittsburgh, Pa. Erie, Pa. Chicago, Ill. Detroit, Mich.
New York, N. Y. Syracuse, N. Y. Cincinnati, O.
Cleveland, O. Los Angeles, Calif.

S-3

NEW from DELTA



20" metal-wood

Variable Speed

BAND SAW

Now you can have the Band Saw features you said you wanted most—*and for less than $900!* This all-new Delta Band Saw (shown with optional blade welder) gives *greater accuracy, better cutting performance* with:

WIDE RANGE VARIABLE SPEED DRIVE—50 to 4500 FPM—cuts stainless steel, aluminum, wood, plastics.

SCIENTIFICALLY DESIGNED BLADE GUIDES—give maximum blade support for heavy metal cutting.

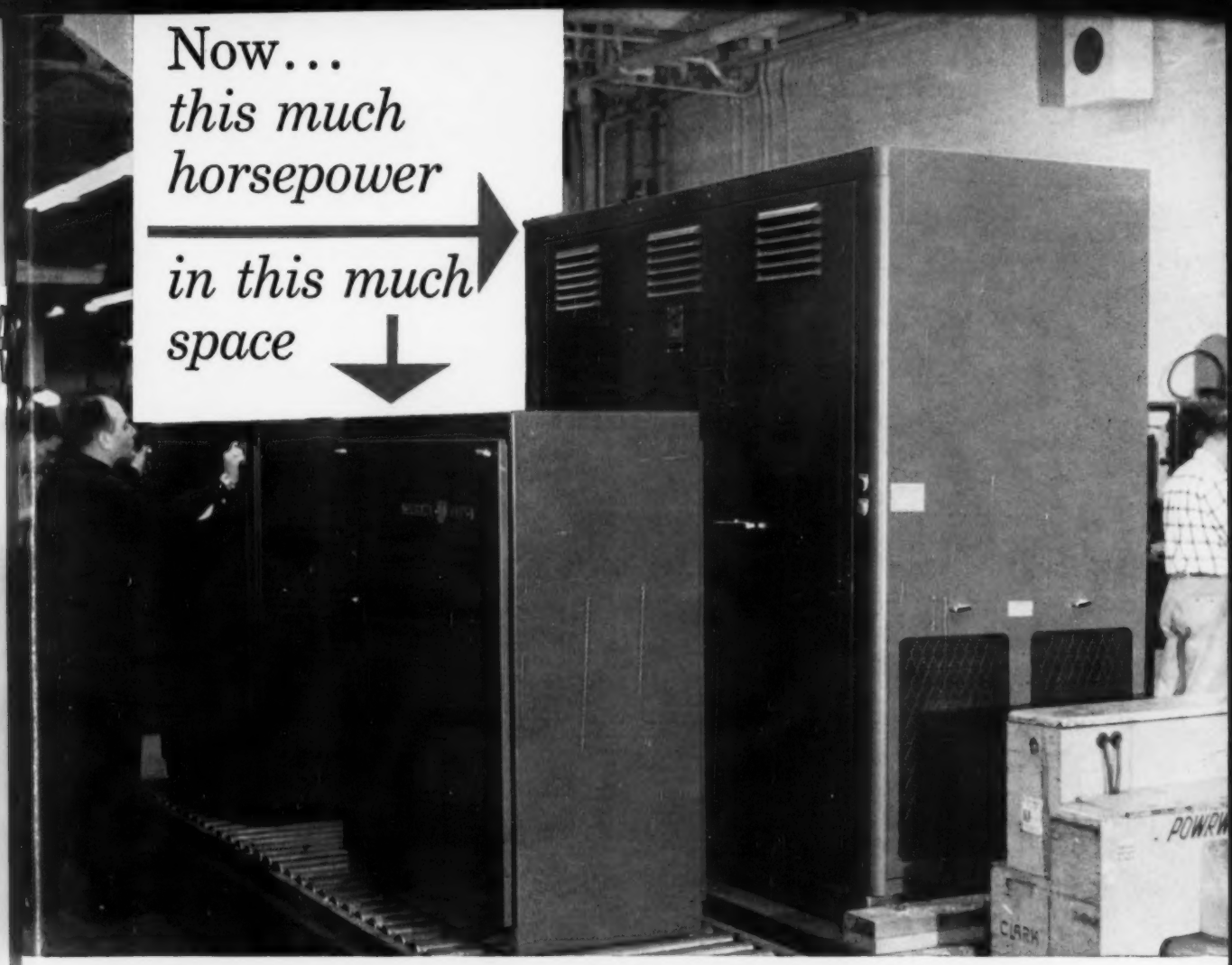
RUGGED FRAME CONSTRUCTION—massive, rigid internal frame with modern fabricated exterior.

SEE IT AT YOUR NEAREST DELTA DEALER—he's listed under "TOOLS" in the Yellow Pages—or write: Rockwell Manufacturing Company, Delta Power Tool Division, 640G N. Lexington Ave., Pittsburgh 8, Pa.

DELTA INDUSTRIAL TOOLS

another fine product by

ROCKWELL



New 50 hp. Super "T" V★S Control Units compared with 50 hp. old style drive on Reliance production line.

New Reliance SUPER 'T' V★S DRIVES put more power into a 35% smaller package

You can increase usable work space and improve machine performance with the New Reliance Super 'T' V★S Drive. More than just a compact drive, the Super 'T' packs extra punch into its new small size.

Like the Super 'T' Drive Motor, the new control unit uses Class B insulation, and will take repeated 100% overloads of one minute duration. These features plus special control apparatus design and the Super 'T' D-c. Drive Motor actually put more power in less space.

This systematic design balance of power unit, drive motor and controls forms a fast functioning drive to provide a wide range of variable operating speeds from a-c. circuits.

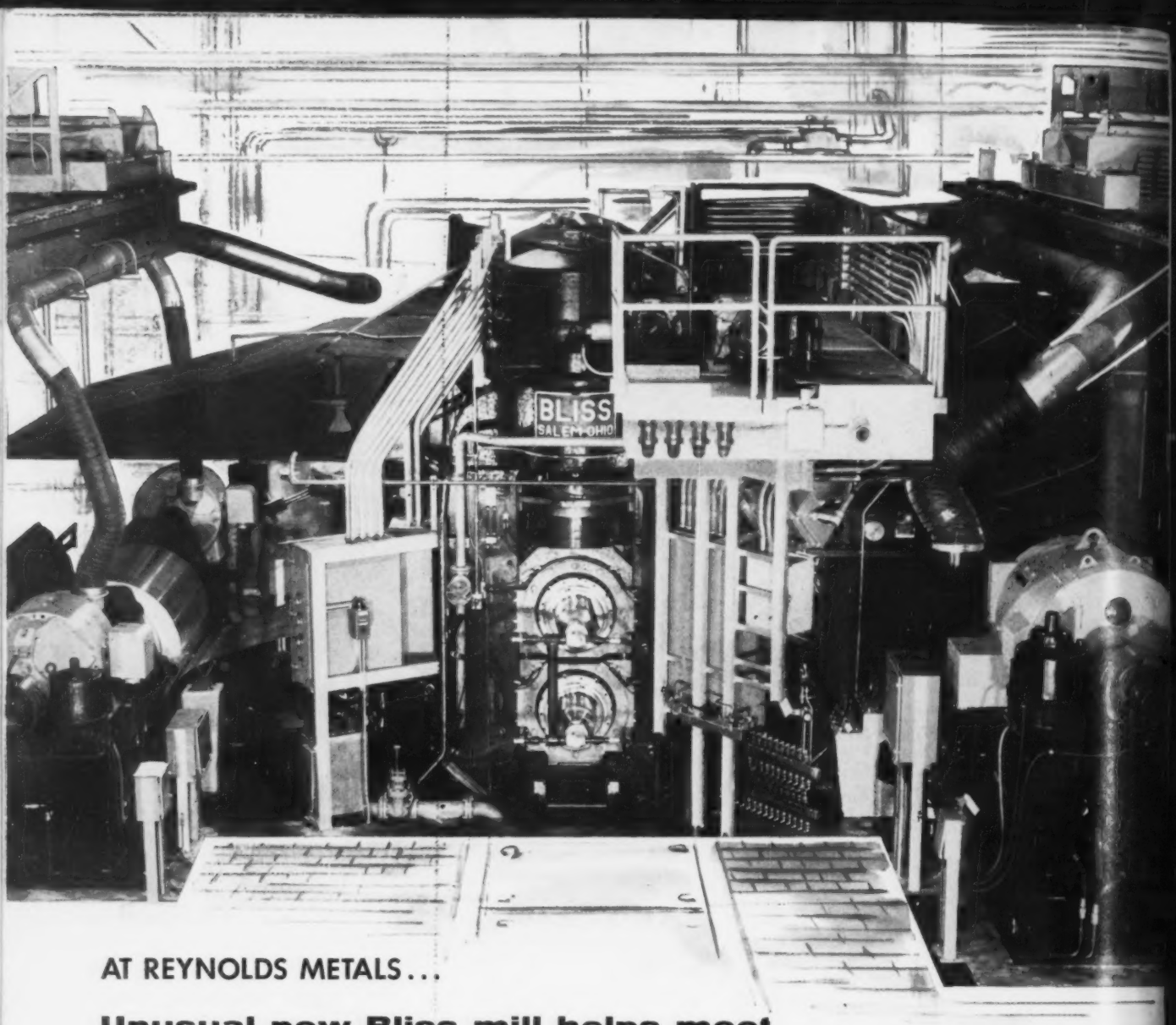
40—150 hp. Super 'T' V★S available for immediate delivery. Contact your Reliance Sales Engineer for delivery schedules of the complete line, 1—350 hp. C-1628

Product of the Reliance Electric and Engineering Company, manufacturers of a-c. motors, Master Gearmotors, Reeves Drives, Super 'T' D-c. Motors, generators, controls and engineered drive systems.

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 27A1, CLEVELAND 17, OHIO
Canadian Division: Toronto, Ontario
Sales Offices and Distributors in principal cities

MASTER R REEVES



AT REYNOLDS METALS...

Unusual new Bliss mill helps meet growing demand for bright aluminum strip

First of its kind to be installed by Reynolds Metals Company for sheet operations, this new Bliss two-high cold reduction mill recently went into operation at Reynolds' Alloys Plant, near Sheffield, Ala.

A 66-inch mill capable of speeds up to 1000 fpm and reductions as high as 50%, the new mill has been especially designed for rolling bright aluminum strip, now being used in increasing quantities for both decorative and structural applications by the automotive, aeronautical, trailer and other industries.

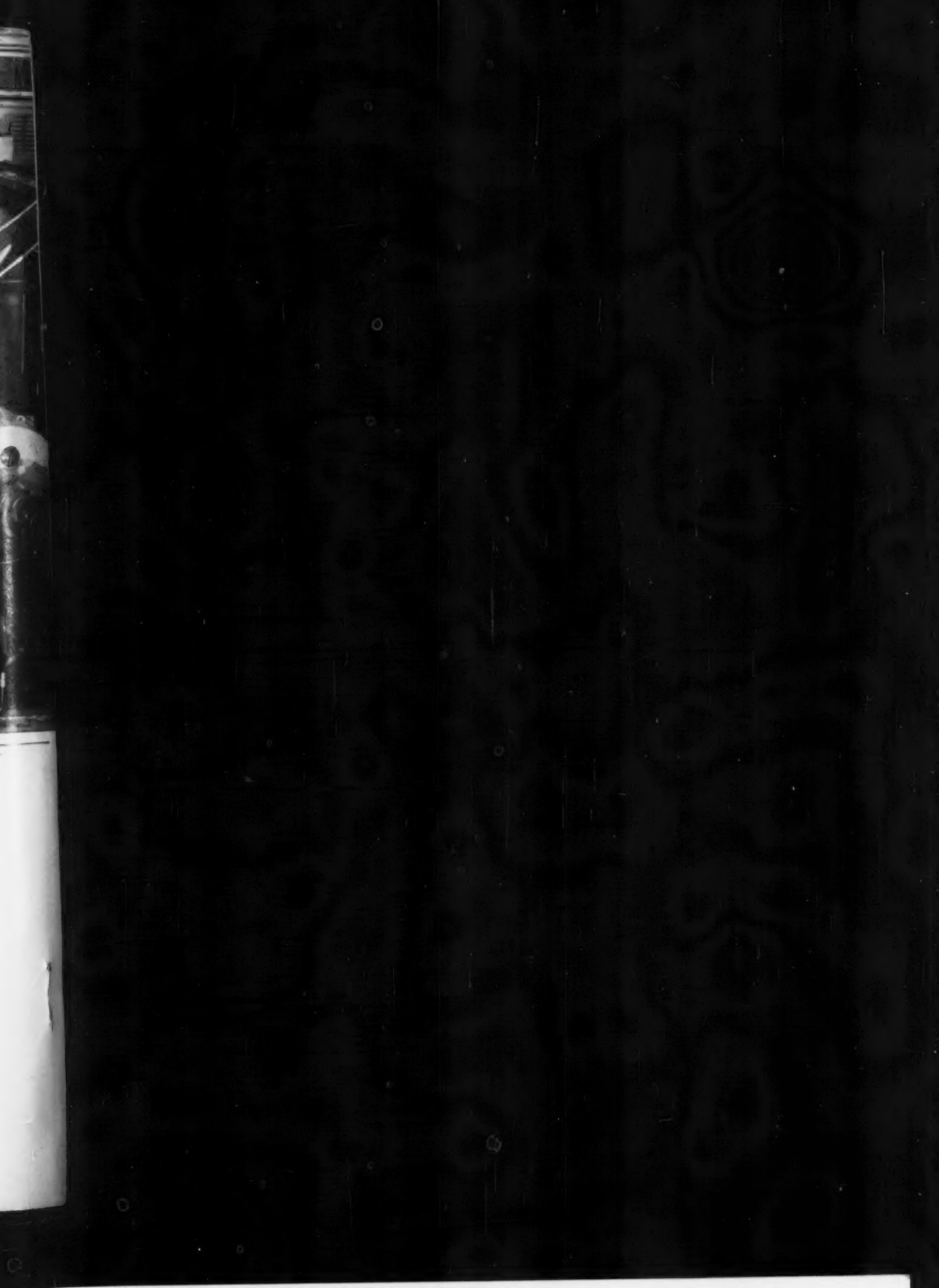
Among the unusual design features built into the mill by Bliss' Rolling Mill Division are a continuous line flow coolant filtration system and a special heating arrangement that maintains the proper shape of the rolls. Electronic controls provide gage consistency in high speed acceleration and deceleration, as well as permitting the operator to detect difficulties at any point in the rolling operation from his position at the control panel.

According to Reynolds Metals, the new Bliss mill is part of a $65,000,000 expansion and modernization program now going on at the Alloys Plant.

For more examples of Bliss rolling mill and accessory equipment currently in use in both ferrous and nonferrous rolling plants, write us today for your complimentary copy of our new 84-page Rolling Mill Brochure, Bulletin 40-B.

BLISS
SINCE 1857

Bliss is more than a name... it's a guarantee

E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio